Where product design meets investor behavior

How do individual investors' evaluations of companies' product design influence their investment decisions?

Jaakko Aspara

Do investors in the stock market care about companies' product design when making investment decisions? The dissertation at hand sheds light on this question by studying how investors' subjective evaluations of a company's products influence their willingness to invest in the company's stock. The focus is on individual investors, and the reported empirical studies include quantitative surveys and an experiment, conducted among Finnish individual investors.

The studies show that positive product design evaluations tend to (a) generate optimism about the financial returns of a company's stock – and (b) even elicit "extra willingness" to invest in the company, over and beyond its expected financial returns.

Specifically, both optimism about a company's financial returns and "extra willingness" to invest in it (beyond financial returns) are positively influenced by two product design -related factors. The first factor is (1) the personal relevance that an investor attaches to "domains of life" that the company's products represent or support. Such domains can be various activities or areas of interest (e.g., road traveling, gardening, sport, electronics, aeronautics) – or more abstract themes or ideals (e.g., mobility, healthcare, environment-protection). The second influential factor is (2) the investor's overall affect or liking for a company's product design. This factor reflects the degree to which the investor perceives the company's products to be pleasant, attractive, good, and likeable overall.

The results imply that companies can utilize product design's potential to attract investments – from investors who are appealed by the company's products and their design. Also "hybrid" business models can be created, which are based already at the outset, on certain investors' fondness of the company's current or future product design.

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Acknowledgements

This doctoral dissertation for the degree of Doctor of Arts is a result of a journey that has been of great personal relevance and pleasure to me. The personal relevance and pleasure have stemmed mostly from my long-running interest in the topic: product design and its significance for companies. Notably, this dissertation is already the second doctoral dissertation for me, as I wrote my first one in economics/business administration in 2007 (on a non-related topic). However, I would say that the amount of personal learning has actually been greater this time: When you are truly interested in the topic, you also tend to learn a lot. This time I've also been more mature in terms of thoughts and skills, I believe – which has further opened me up to new important ideas.

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In Helsinki, 20.11.2009
Jaakko Aspara

1
Introduction

Both academicians and practitioners in the field of *design management* have been increasingly interested in the strategic role of product design with respect to company management (e.g., Borja de Mozota & Clipson, 1990; Borja de Mozota, 2002; Buchanan, 2008; Hertenstein & Platt, 1997; Heskett, 2001). In other words, there has been a growing interest in various product design -related, strategic issues that are crucial to the management of contemporary firms.

With regard to *academia*, the ground for a strategic business approach to design was laid already in the late 1980s and early 1990s in the emerging academic discourse on design management. Blaich and Blaich (1993), for example, emphasized the role of design manager in identifying ways in which design can contribute strategic value to a company. They especially stressed that design management is not only about administering design projects and staff, but also about strategic issues related to linking corporate goals to consumers' point of view (through design). Subsequently, towards the 2000s, researchers then increasingly explored what the role of product design in company strategy indeed is or should be. A recent example is Bruce and Bessant's edited collection *Design in Business* (2002) that brings together scholars to review and "lay out the strategic importance of design" (p. xxii). In their collection, the contributors discuss different managerial perspectives to design – including ones stemming from the fields of strategy, marketing, operations management, organizational behavior, and law as well as finance – and how these perspectives can contribute to "total design management" and better integration of design in business.

With regard to *practitioners*, in turn, the transformation of industrial designers' profession towards more strategic issues is well demonstrated by Valtonen's recent dissertation (2007). Valtonen illustrates – by focusing on Finland as her case country – how the work of "designers" in companies changed during the 1990s and early 2000s from being constituted mainly of operative product-development activities to include also work related to company strategy. This means that designers' work and expertise are being increasingly used for strategic purposes and given more strategic importance

(p. 344). Correspondingly, Valtonen claims, design management issues and approaches have evolved "from creating a coherent product portfolio to a broader view on corporate strategy as well as brand experience". This has also made the term "strategic design" more common (Valtonen, 2007, p. 124; see also Zetterlund, 2002; Kristensen & Lojacono, 2002).

However, there is one strategic business aspect that has been continually and rather completely ignored over the years, when it comes to the strategic perspectives of design management. That is the role and behavior of *investors* with respect to a company's products and product design strategy[1]. This ignorance is rather surprising, considering that investors are, in the contemporary view[2], the ultimate overseers of a company's strategies, as well as suppliers of capital needed for implementing the strategies. Moreover, the strategies of a company determine its performance as a vehicle of shareholders' wealth management. In brief, for investors, the strategies of a particular company determine the financial yields (dividends, capital gains) that can and will be gained through investing in and holding the company's stock and/or trading it. The trading at large determines, in turn, the current market valuation of the company's stock, which is often considered as a main measure of performance of the company and, therefore, its strategies.

[1] The focus here is on equity investors, i.e., ones who supply capital in exchange for the company's (common) stock. Alternative terms to (equity) investor are shareholder/-owner and stockholder/-owner. In this dissertation (as in e.g., Benner, 2007), "investor" is used to denote participants in the stock market in general – that is, the population of potential purchasers of a firm's stock. "Shareholder" is used to denote the particular investors who hold a particular firm's stock at a given moment.

[2] Indeed, companies' strategies have been considered to be – in the past decades – increasingly driven and governed by the institutions and interests of the financial market and investors (e.g., Davis, 2002; Fligstein, 1990; Fligstein & Shin, 2004; Folkman, Froud, Johal, & Williams, 2007).This phenomenon is often called "financialization" of the corporate world and society in general – and seen to be the contemporary phase of capitalism (e.g., Clark & Hebb, 2004; Clark, 2007; Froud, Haslam, Johal, & Williams, 2000; Froud, Leaver, & Williams, 2007; Hawley & Williams, 2000; Krippner, 2005; Martin, Casson, & Nisar, 2007; Tainio, 2003; Zorn, Dobbin, Dierkes, & Kwok, 2004, 2005).

In fact, stock market valuation has also been used as a "measurement stick" in recent design management literature (e.g., Rich, 2004).

Taking into account the increasing research interest in the strategic roles of product design, on one hand, and the inevitable relation between investors and strategy, on the other, the scant number of references to investors in design management literature is indeed surprising. The few references to investors that do exist are mostly rather marginal remarks or claims. For instance, it has been remarked that (good or successful) product design contributes to corporate image, and investors have been marginally mentioned as one stakeholder class among others (customers, employees, suppliers, regulators, etc.) who will be attracted by the improved corporate image (Bruce & Bessant, 2002, p. 15; Gray & Balmer, 1998; Schmitt, Simonson, & Marcus, 1995). Another remark or claim has been that from shareholders' perspective, "good design is good business" (Borja de Mozota, 2006), implying that well-designed products *indirectly* attract investors by leading to increased sales and better margins, more brand value, greater market share, and higher return on investment (ROI). Some consultants have also seen this to manifest in above-average stock market returns of "good-design" companies (e.g., Rich, 2004).

At any rate, the crucial observation behind the present dissertation is that beyond the aforementioned marginal references to investors in design management literature, the literature is particularly underdeveloped in regards to recent academic research in *behavioral finance* – the primary academic discipline that studies investor behavior and psychology. Namely, there is an emerging stream of research in behavioral finance that suggests that people's subjective evaluations of companies' products influence their attraction to companies as investors *directly*. For instance, Frieder and Subrahmanyam (2005) hypothesize that individual investors may prefer stocks of companies that have highly regarded, high-quality products – i.e., people's product quality evaluations might "spill over" to their investment decisions. Importantly, it has also been suggested that in addition to financial benefits, individuals may make investments partly based on self-expressive benefits

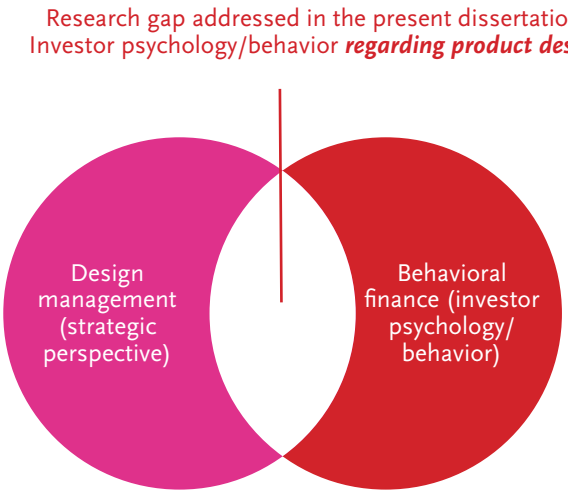


Figure 1.
Thematic depiction of the research gap

that can be gained from investing in certain kinds of companies, which produce certain kinds of products (Fama & French, 2007; Statman, 2004; Aspara, 2009; Aspara & Tikkanen, 2008).

To recap the research setting: design management research lacks theoretical development and empirical evidence related to the issue of how investors relate to a company's product design. This issue, in turn, coincides with the question of whether and how individuals' product design evaluations will spill over to influence their investment decisions – a question that recent behavioral finance research has started to examine (but which it, too, has in fact examined only sparsely so far). Consequently, the purpose of this dissertation is to address this dual research gap – by identifying the perceptual and evaluative mechanisms of how a company's product design may attract investors.

Figure 1 illustrates how this research gap resides in a conjunction whereby design management's strategic perspective "meets" the behavioral finance perspective to investor psychology and behavior. Therein, the research gap is constituted by the sparse extant body of knowledge concerning investor psychology/behavior regarding companies' product design.

Specifically, I focus my theoretical development and empirical studies on the perceptual and evaluative mechanisms of how *individual* investors' subjective perceptions and evaluations of companies' product design influence their decisions to invest in companies' stocks. The core research question is:

- How do investors' subjective perceptions and evaluations of a company's product design influence their investment decisions towards the company's stock?

When it comes to the scope of the dissertation, my main object of study is – as implied above – *investor psychology and behavior with respect to companies' product design*. Hence, this dissertation does *not* focus on companies' design management capabilities, processes, or practices as main objects of study[3]. The focus is *not* even on investors' perceptions of such capabilities or practices – but rather on investors' perceptions and evaluations of companies' products and product design, inasmuch as investors have perceptions of these due to their existence (as artifacts) in the product markets[4]. Moreover, it is important to note that the theoretical development and empirical data are mainly focused on *individual* investors, i.e., private individuals who

[3] Nevertheless, an important purpose of the dissertation is, eventually, to give recommendations about design management strategies while discussing the results of the study.

[4] As artifacts, the products and their design are, of course, more or less direct outcomes of the design capabilities and practices of the companies. In any case, the study focuses on the former (artifact evaluations), rather than on the latter (capabilities and practices).

invest some of their money (or savings) in the stock market. This means that institutional investors and investment intermediaries (such as investment analysts) are outside the primary scope of the present dissertation.

Theoretically, I develop hypotheses about the effects that product design-related perceptions and evaluations have on investors' decisions to invest in companies' stocks on the basis of (social) psychological theories on product-related personal relevance and involvement (e.g., Alba & Hutchinson, 1987; Bloch, Sherrell, & Ridgway, 1986; Laaksonen, 1994), identification (e.g., Bhattacharya & Sen, 2003; Scott & Lane, 2000; Aspara et al., 2008), and affect (MacGregor, Slovic, Dreman, & Berry, 2000; Slovic, Finucane, Peters, & MacGregor, 2002a, 2002b, 2007; Zajonc, 1980). I derive hypotheses by applying and extending these individual-level theories to individuals' investment decisions, and by presenting supportive findings from extant behavioral finance research, when available. Yet, the theory development provides new insights also to behavioral finance, as it explicates the mechanisms how product design evaluations, in particular, spill over to people's investment decisions.

In order to test my hypothesis, I have conducted three studies. Two of the studies (Studies 1a and 1b) analyze survey data on recent, real-life investment decisions of a sample of 340 investors. This data consists of investors' retrospective self-reports about their decisions to invest in the stocks of particular companies, on one hand, and their evaluations of those companies' products, on the other. I tested my hypotheses on this correlational data by employing causal (path) modeling, and found support to most of the hypotheses. Another, complementary study that I conducted (Study 2) was a traditional psychological experiment. The participating subjects, 187 in total, were active stock investors recruited at events related to stock investing. The results of this study also support the theoretical hypotheses and are consistent with the results of the two other studies.

As to the results of the dissertation, I identify and find empirical evidence of two important, product design -related factors that influence investors' investment behavior and decisions concerning companies' stocks. The first

factor is (1) the personal relevance or importance that an investor attaches to "life domains" represented by a company's products. Such domains can be heterogeneous activities or areas of interests (e.g., motoring/car-driving, gardening, sport) – or more abstract themes or ideas (e.g., healthcare, eye vision, mobility, environment-protection).The second factor, in turn, is (2) the investor's overall affect or liking for a company's product design, reflecting the degree to which the investor perceives the company's products to be pleasant, attractive, good, and likeable overall.

Concerning the mechanism of how these two product design factors influence investor behavior, my results explicate how the factors may address two types of investor needs, i.e., (A) financial needs and (B) self-expressive/emotional needs. First, the results show how (1) the personal relevance that an investor attaches to a domain represented by a company's products as well as (2) his[5] overall affect for the company's product design have positive effect on (A) his optimism about the company's financial returns and negative effect on the consideration that he gives to alternative investment opportunities. Second, the results show that the two factors have positive effect, due to self-expressive/emotional reasons, on (B) the investor's determination to invest in the company rather than in another company that has approximately similar expected financial returns. Even further, the factors are found to elicit preparedness to invest in the company with lower financial returns expected from its stock than from another stock.

All in all, the results considerably extend the design management notion of the strategic benefits that a company can enjoy from designing pleasurable and personally meaningful products (e.g., Battarbee, 2004; Battarbee

[5] Throughout this dissertation, I will only use the personal pronoun "he" (or "his") when referring to individuals. I do this purely for sake of simplicity, to avoid the complexity involved in repeating expressions like "he/she" and "his/her". The use of "he" does not in any way suggest that the arguments would merely apply to males, or that the arguments would be contingent on the gender of the individual.

& Koskinen, 2005; Clark, Smith, & Yamazaki, 2006; Koskinen, Battarbee, & Mattelmäki, 2003; Normann & Ramírez, 1993; Verganti, 2003) – especially by demonstrating that product design will not only create strategic distinction for the company in the product markets, but also in the stock markets. In so doing, the present findings have implications for design/management practice when it comes to attracting investments (especially from investors who are appealed by the company's product design) and creating strategic missions and business models that take into account, already at the outset, certain investors' potential fondness of the company's product design.

The structure of the dissertation is as follows. After this introduction (Chapter 1), Chapter 2 presents a brief outline of what kind of strategic business issues have been addressed in extant design management literature as well as a review of how investors have been referred to in that literature. In Chapter 3, then, I go on to present theory and hypotheses development concerning the research question, based on earlier behavioral finance findings and (social) psychological theories of affect as well as identification and self-congruence. After the development of the hypotheses, Chapter 4 serves as a brief introduction and review of the empirical studies that I conducted to test the hypotheses. Chapter 5 presents two of these studies (Studies 1a and 1b) and Chapter 6 the third, complementary study (Study 2). Finally, in Chapter 7, I discuss the research contributions of the dissertation and implications to practical design management.

2
Literature background

2.1
DESIGN MANAGEMENT AND STRATEGIC ISSUES – A SHORT HISTORY

Above I began the discussion of scholarly interest in the strategic roles of product design with an example from Bruce and Bessant (2002). In fact, these authors even claim to be "*first*... to establish the strategic importance of design as an integrated process" (Bruce & Bessant, 2002, back cover, emphasis added). However, the academic discourse on *design management* in fact started to emphasize the strategic importance and roles of product design already much earlier. In fact, both in the US and Great Britain, where the discourse started to emerge in the 1970s and 1980s, the linking of product designs and coordinated design activities to corporate management and business strategy was emphasized early on.

In the US, specifically, the Design Management Institute (DMI) was founded in 1975 with affiliation to Massachusetts College of Art, and it has throughout its history had the objective of promoting the understanding of design as a crucial business tool and familiarizing business managers with the nature, process, and significance of design, as well as designers with business and management (Borja de Mozota, 2003). In the mid-1980s, the practitioner-oriented DMI's efforts grew more academic, as DMI started a collaborative research project called "TRIAD Design Project" with Harvard Business School, selecting such companies for case studies that could illustrate the benefits of corporate investment in design (Johansson & Svengren, 2003). The project also led to DMI's starting to publish *Design Management Journal,* which is still the leading (semi-)academic journal in this rather small academic field.

In Great Britain, in turn, London Business School (LBS) pioneered as the first academic institution to teach design issues to managers in 1976. Also LBS's work was first mostly practitioner-oriented, concerned with reporting best practices (Gorb & Dumas, 1987), but by the end of the 1980s started to develop into more academic research and discourse. Under the lead of the

head of LBS's Department of Design Management, Peter Gorb, the discussion grew also more international. For instance, the first international design management conference in Finland was arranged in 1987, with Gorb serving in its advisory board (Melgin, 1990, 1991; Valtonen, 2007, p. 123).

Gorb's work did not go unnoticed in the US either, where one of the most influential 20th century business scholars, the marketing 'guru' Philip Kotler co-authored – in *Journal of Business Strategy* – an article stressing design management as an important strategic tool (Kotler & Rath, 1984). Kotler and Rath discussed the management of design as "a potent strategic tool that companies can use to gain a sustainable competitive advantage". Informed by the work of Gorb (1979), they viewed design management particularly as the management of the processes connected to the design of products, environments, information, and corporate identities, and various design elements therein (e.g., performance, quality, durability, appearance, cost).

In fact, the above Kotler reference also succinctly points out the basic classes of corporate artifacts that design management rather early started to address. Specifically, the design and management of corporation's (i) *products*, (ii) *environments* (e.g., buildings, machines, tools), and (iii) *information* (e.g., communications materials) were all in the focus (see also Gorb, 1990). The adjacent focus on *corporate identities*, which was seen to encompass the former three classes of corporate artifacts (along with employee behavior), was also present early on – especially due to the influential work by the consultant Wally Olins (e.g., 1978; 1985; 1989; 1991; 1995), whose work was approaching the academic interface.

All in all, even if the academic interest in and publications on design management were generally rather limited in the 1980s (Johansson & Svengren, 2003), certain important, main themes concerning the strategic relevance of design started to emerge in academic design management literature. By and large, these themes continue to be in place today and can be identified to deal with (1) strategic relevance of the marketplace distinction that is achievable through designed artifacts, (2) strategic relevance of

managing the processes and activities of designing, and (3) strategic relevance of coordination between various designs and coherent corporate identity. The following sections briefly review these themes.

2.1.1 STRATEGIC RELEVANCE OF THE MARKETPLACE DISTINCTION ACHIEVABLE THROUGH DESIGNED ARTIFACTS

Indeed, one central strategic theme of design management research has focused on the fundamental strategic importance of (the management of) design in the respective artifact classes of products, environments, and information. Especially, the research early on started to outline and describe how companies can through better designs achieve enhanced *marketplace distinction* or differentiation (relative to competitors).

Such distinction will arguably occur through improvements in the artifacts' consumer- and user-valued aspects, elements, functions, or characteristics – e.g., functionality, quality, appearance, ergonomics, durability, usability/ease of use (e.g., Kotler & Rath, 1984; Borja de Mozota, 1985; Borja de Mozota & Clipson, 1990; Boztepe, 2008; Hayes, 1990; Lorenz, 1986; Olson, Cooper, & Slater, 1998; Phatak & Chandron, 1989). Note that the focus has indeed been not only on the shape and (aesthetic) appearance of products, but "meaningful distinction" of their entire character (e.g., Lorenz, 1994). Also, many of the authors (Dickson et al., 1995; Hayes, 1990; Kotler & Rath, 1984; Walsh, Roy, & Bruce, 1988) reminded about the importance of taking into account the cost components of design – from the company perspective – in terms of (cost-efficient) manufacturability of products and other artifacts. At any rate, the claim was and has been that a company could, by virtue of its designed artifacts, potentially enjoy increased strategic distinction or differentiation among its target markets and/or competitive advantage in general.

The object of study (and claims) in this stream of design management literature has often dealt with marketplace distinction per se and the role

of design characteristics (i.e., functionality, quality, appearance, ergonomics, durability, usability etc.) therein, rather than or in addition to actual design or management processes of companies. The evidence has, as Roy (1994; see also Gemser & Leenders, 2001; Hertenstein, Platt, & Veryzer, 2005) notes, mostly been anecdotal or based on "winning" companies and successful designs. Nevertheless, authors with backgrounds in consumer, marketing, and innovation management research have also applied more systematic consumer and marketing research techniques to study and demonstrate the distinction that can be achieved through *product* designs, especially[6] – inasmuch as the distinction manifests in consumers' or buyers' product evaluations, preferences, and choices (e.g., Berkowitz, 1987; Bloch, 1995; Creusen & Schoormans, 2005; Henderson, Cote, Leong, & Schmitt, 2003; Hertenstein, Platt, & Veryzer, 2005; Sewall, 1978; Veryzer, 1993, 1995, 1998; Veryzer & Hutchinson, 1998). The resulting, positive effects on companies' eventual market positions and performances have also been increasingly demonstrated (e.g., Hertenstein, Platt, & Veryzer, 2005; Hertenstein, Platt, & Brown, 2001).

2.1.2
STRATEGIC RELEVANCE OF THE PROCESSES AND ACTIVITIES OF DESIGNING

While the above theme deals with the ultimate (external) marketplace distinction that can be achieved with product and other designs – "design as differentiator" (see e.g., Borja de Mozota, 2002; Hayes, 1990) – another strategic theme in the literature has focused on the management of (internal) *processes* and *activities of designing* within the company[7].

[6] Somewhat similar studies exist for logo designs (e.g., Henderson & Cote, 1998) and packaging designs (e.g., Schoormans & Robben, 1997).

[7] Of course, one of the main objectives of such processes and activities is the external marketplace distinction of the company, in the form of well-designed (end) products and other artifacts.

Strategic, management perspectives regarding this second theme evolved from design management's early focus on administration of (internal as well as external/outsourced) designer staff, resources, and projects (see e.g., Gorb, 1990; Topalian, 1980). While the importance of such operational administration was by no means forgotten about, more strategic perspectives to the processes of designing emerged in the 1990s, so as to complement the operational/administrative views. Indeed, Blaich & Blaich (1993), for example, came to underline that design management is not just the assignment of the administrative duties to a manager but also has a role in identifying and communicating the ways that design can contribute strategic value to a company. In their view, design management should entail – in addition to management of operative design resources at every level of the company – a more strategic activity sphere. That is, contributing to corporate strategic goals by developing and auditing a design policy, articulating the design policy alongside corporate strategy, and using design to identify needs from the consumers' point of view. In a similar vein, Kristensen and Lojacono (2002, p. 109) later viewed "strategic design" largely as a process/management competency: "strategic design is the knowledge about what design can do for a company that pursues strategic options and knowledge about the management of the overall design process"[8].

In fact, design management processes came, during the 1990s, to be increasingly likened to the general *innovation management processes* of a company (see e.g., Borja de Mozota, 2002; Hise, O'Neal, McNeal, & Parasuraman, 1989; Roald; Verganti, 2003; Von Stamm, 2003; Walsh, 1996). This likening included the integration of design management perspectives

[8] This also includes wisdom about what parts of design processes to outsource to external design consultancies and what not – as well as how.

[9] This became evident, at the latest, when researchers such as Hargadon and Leonard-Barton contributed to both design management discourse and business/strategy/management discourse (Hargadon & Douglas, 2001; Hargadon & Sutton, 1997; Hargadon, 2003, 2005; Leonard-Barton, 1991, 1992; Leonard-Barton & Rayport, 1997).

with relevant perspectives from strategy, management, marketing, and product innovation/development literatures[9] – such as those related to value chains, market analyses and branding, and concurrent engineering. A related development in the literature was – as implied by the above reference to Kristensen and Lojacono (2002) – the conceptualization of design activities, processes, and resources at an even more abstract level, as a potential organizational capability or competence (e.g., Jevnaker, 2000, 2005; Johansson & Holm, 2006; Terrey, 2008) related to innovation.

In any case, the question was, on one hand, increasingly about describing and suggesting ways for integrating design processes and designers to the (technological) research and product development processes of a company, as well as to the user/market research, promotion, and branding processes (e.g., Kristensen & Grønhaug, 2007; Lorenz, 1986; Perks, Cooper, & Jones, 2005; Turner, 2000; Veryzer, 2005) . On the other hand, the question was even about viewing design management to be quite synonymous with strategic innovation management. That is, design management was increasingly seen to refer to the broad management of strategies and processes related to developing new products and introducing them in the market – albeit with a special emphasis on user- and market-centered thinking and methods as strategic drivers (e.g., Clark & Fujimoto, 1991; Leonard-Barton & Rayport, 1997; Peters, 1989; Salvador, Bell, & Anderson, 1999). All in all, this strategic sub-theme (i.e., design management being *de facto* strategic innovation management) has become increasingly popular in recent years, manifesting in the contents of several textbooks introduced on design management (e.g., Borja de Mozota, 2002; Von Stamm 2003).

Eventually, two broad alternatives of linking strategic and design processes came to be identified over the years (see Hertenstein & Platt, 1997): in one, strategy drives design; in the other, design influences strategy. An example of the former is how a company can and should translate its strategic (brand) values and mission to the attributes and style of the *tangible products* that it develops/designs (e.g., Karjalainen, 2004). An example of the latter is where product design processes, activities, and capabilities – and

the experimentation and innovation involved – actually drive the strategic course of the company (e.g., Ravasi & Lojacono, 2005). This has been the case with companies such as Alessi, Apple, Philips, and Sony. Also the idea of product concepting or concept design – as a method of experimentation with future product ideas (e.g., Keinonen & Takala, 2006) – is often associated with the latter approach.

2.1.3 STRATEGIC RELEVANCE OF COORDINATION BETWEEN VARIOUS DESIGNS AND COHERENT CORPORATE IDENTITY

A third major strategic theme in design management literature has been that focusing on the *coordination* and integration of a company's designs and design strategies *across* the various artifact classes (especially, product design, informational/graphic design, and environmental design). The objective of such coordination would be to make sure that the different corporate designs contribute to a coherent *corporate identity* (or image), as perceived by different stakeholders – or at least that messages conveyed would not be divergent or inconsistent. As noted by many observers (e.g., Johansson & Svengren, 2003; Ughanwa & Baker, 1989; Woodham, 1997), the main early proponent of this view was Wally Olins (1985), a Briton who operated in the interface of consultancy and academia. Olins attempted to advocate a view of design (and identity) management as the materialization of a company's entire strategy – implemented in the form of the various design objects of the company and through cooperation of the organization's product designers, graphic designers, architects, management development people, and communication people (Olins, 1989).

Yet, the actual focus in this literature stream slipped, *de facto,* somewhat continuously towards discussion of the two-dimensional visual symbols related to corporate (visual) identity, such as corporate logotypes, colors, and graphic elements, and their coordinated use on corporate advertising materials, letterheads, vehicles, buildings, etc. (see e.g., Dowling, 1994; Melewar

& Saunders, 1998; Melewar & Karaosmanoglu, 2006; Topalian, 1984). This was perhaps because the coordination of the use of logotypes and colors in terms of coherence was relatively simple to conceive and perhaps because many of the influential authors, including Olins, had a background in graphic design consultancy.

Only in the 1990s, did the more complex relationships of design and corporate identity come to be addressed again (Hatch & Schultz, 1997; Topalian, 2003). Actually, this time the pendulum of focus shifted from the management of two-dimensional visual symbols of the corporation somewhat to another extreme, i.e., to quite abstract issues: how to (re)define or design "corporate values", "corporate personality", "corporate voice" etc. and have the organization and its employees behave and communicate accordingly. In other words, the design management discourse came to be integrated with the *organizational identity* and (corporate) *brand identity* discourses (see Johansson & Svengren, 2003; Olins, 1990, p. 5). Nevertheless, despite the increasing interest in abstract, organizational behavior determinants of corporate identity and image, many contributors were also re-emphasizing the fact that a company's *products* are actually (always) at the core of its corporate identity and corporate/brand image – and that product design (or product innovation and development) should therefore be at the center of the corporate mission and strategy (e.g., Ashcraft & Slattery, 1996; Blaich & Blaich, 1993; Keefe, 1995; Montague, 1999; Ravasi & Lojacono, 2005; Stompff, 2003). In fact, even the visual identity advocate Olins emphasizes – as noted by Bruce and Bessant (2002) – *products* as the ultimate determinant of a company's identity:

> *"When you think of Sony, what do you recall first? ... Certainly not its advertising... Not even its symbol or logotype, if you can remember them. No. You think of its apparently endless range of brilliantly innovative products... Sony's identity is largely conditioned by its products." (Olins, 1989/1990, cited in Bruce and Bessant, 2002, p. 95).*

2.2
DESIGN MANAGEMENT AND INVESTORS

As evident from the above review, there have been quite varied discussions on the strategic roles and implications of design for company management – and increasingly so in recent years. Nonetheless, as elaborated below, what has been continually and rather completely ignored in the strategic perspectives to design, is the role or behavior of *investors* in relation to a company's product design.

Now, where rarely occurring in design management literature, references to investors have mostly appeared amidst a list or series of stakeholder classes (customers, employees, investors, general public, etc.). Such lists have appeared in connection with the general claim that design-generated distinction/differentiation in products or other artifacts – as well as coordinated and attractive corporate/brand identity – can make the company more attractive to *all* stakeholders and therefore also investors (e.g., Bruce & Bessant, 2002, p. 87; Schmitt, Simonson, & Marcus, 1995).

Beyond such general claims, slightly more specific and insightful perspectives to the relation between investors and a company's product design have been presented by Andrew Hargadon and Brigitte Borja de Mozota. Hargadon's work has concentrated on depicting – often through elaborate case studies such as a study into Edison and his electric light innovation (Hargadon & Douglas, 2001) – how success in design depends on how design "addresses the needs of multiple actors" (Hargadon, 2005). Among these actors, Hargadon often mentions investors – among others such as users, suppliers, distributors, content-providers, regulators, and the general public.

Borja de Mozota (2003, p. 113), in turn, notes that in future, design will play an important role in firm's financial (owner) relationships, among other relationships – and remarks that design process is an identity process that defines the company for itself, its customers, and its investors (p. 17). Elsewhere, Borja de Mozota (2006) further prescribes that design managers should attempt to outline strategic vision -based, yet measurable links all

the way from customers'/market's perceptions of the company's design to financial value creation. One of the ultimate questions for companies, Borja de Mozota suggests, is "how should design appear to our shareholders?" (pp. 47, 48).

Nevertheless, even Hargadon's and Borja de Mozota's arguments remain, after all, rather superficial when it comes to investors. It is prescribed that company managers, venture creators, or designers "have to address the needs" of multiple actors – including investors – with product designs (Hargadon, 2005); "define the company identity" for investors through design (Borja de Mozota, 2003); and ask "how should design appear to our shareholders?" (Borja de Mozota, 2006). Yet, beyond these kinds of broad, rather philosophical lines, no closer examinations seem to have so far emerged into the generalizable mechanisms of how a firm's product designs potentially attract investors.

Particularly, even if we know and can (intuitively) assume that investors will be attracted by the increased sales and better margins, enhanced brand value, greater market share, and better return on investment (ROI) that "good design" potentially brings about (Borja de Mozota, 2006), the extant research tells us little about the perceptual and evaluative processes involved in investors' decision-making. Curiously enough, even studies (Rich, 2004) which have found (preliminary) evidence of the fact that companies with highly-regarded product design fare better in terms of stock market valuation have been totally ignorant of the mechanisms why or how good product design would attract investors at the individual and subjective level. The found correlation (Rich, 2004) between a precarious measure of "good design" – such as the number of design awards won by companies – and above-average stock market returns[10] tells us, indeed, nothing about the perceptual and evaluative mechanisms involved in investors' decision-making[11]. As a matter of fact, these stock return studies and measurements – as done by consultants – also suffer greatly from confusing the explanandum and explanans (i.e., what is explained with what). Most notably, inasmuch as design awards are given to companies to a large extent on the basis of the

commercial success of the companies' products, it is rather self-evident (or, circular reasoning) that stock valuation – which fundamentally reflects the commercial success of a company and its products – will correlate with the number of awards.

Thus, the question remains: How do investors' subjective perceptions and evaluations of a company's product design influence their investment decisions? This is the main question which I aim to examine in this dissertation, theoretically as well as empirically. In the absence of design management theory on the issue, I will develop my theoretical examination by drawing on theoretical notions and empirical findings available in extant investor research in the fields of behavioral finance and economic psychology. By elaborating on these notions and findings and complementing them with underlying (social) psychological theory on personal relevance and involvement (e.g., Alba & Hutchinson, 1987; Bloch, Sherrell, & Ridgway, 1986; Laaksonen, 1994), identification (e.g., Bhattacharya & Sen, 2003; Scott & Lane, 2000, Aspara et al., 2008), and affect (MacGregor et al., 2000; Slovic et al., 2002a, 2002b, 2007; Zajonc, 1980), I will develop a framework of hypotheses concerning the very research question of how individuals' subjective perceptions and evaluations of companies' product design influence their investment decisions.

The contributions of my study address various streams of design management. Notably, my primary research question, theoretical development,

[10] In a number of studies commissioned by the Design Council (summarized in Rich, 2004), a set of stock exchange -listed companies were divided into groups on the basis of the number of design awards that the companies won. The studies generally suggest that the group of companies that won a high number of design awards continually outperformed other stocks (i.e., the general stock market index). Specifically, the "good-design" companies outperformed the other stocks by 10–200 percentage units within different subperiods (booms, busts) during the overall period of 1993–2003.

[11] The authors of the studies in question themselves state or admit that they have not necessarily been interested in "how the correlation between fund criteria and [stock market] performance arises" (Rich, 2004, pp. 33–34).

and empirical evidence fundamentally extend the literature related to the theme of *strategic relevance of the marketplace distinction achievable through designed artifacts* (cf. section 2.1.1). While earlier research there has mostly focused on strategic distinction that can be achieved through design in product markets – often by studying users' and consumers' evaluations of companies' products and product design – the present research provides insights into the distinction that a company's product design can create in the stock market, by studying the product design evaluations of investors. As implications of the results of the study, I am, consequently, able to provide suggestions with respect to the two other strategic themes of design management literature, as well: about *managing the processes and activities of designing* (cf. section 2.1.2) and *coordinating various designs and coherent corporate identity* (cf. section 2.1.3). This will be done in the Discussion chapter.

3 Theory development: Product design and investors

In this Chapter, I will develop a framework of hypotheses concerning how individuals' subjective perceptions and evaluations of companies' product design influence their investment decisions.

Before theorizing the mechanisms of how product design -related factors affect investment behavior (section 3.2), I will review the specific investment behavior -related constructs or variables of interest (section 3.1) – so as to be able to subsequently theorize what influence the product design -related factors have on those variables.

The investment behavior variables of interest can be broadly divided into three realms. The first realm stems from the traditional finance research notion that posits that investors' investment decisions are primarily guided by financial considerations: Investors' are seen to select investments, including stocks, primarily based on their expected financial returns and risks (Clark-Murphy & Soutar, 2004). An investment decision is, thus, largely determined by the financial returns that a stock is expected to yield (dividends, capital gains). Note that in terms of extant design management literature that (marginally) refers to investors, these financial expectation variables can be considered to relate to the issue how investors perceive the company's business in terms of e.g. likely return on investment (Borja de Mozota, 2006). The specific financial expectations variables of interest will be identified in section 3.1.1.

The second realm of investment behavior variables of interest relates to the notion that investors "select" investments from those available in the market. Traditional finance research assumes that an investor thoroughly considers and compares alternative stocks relative to each other (and even relative to other investment opportunities, such as savings accounts and bonds) before making any investment decision. Yet, recent behavioral finance research has paid increasing attention to how and to what extent investors actually consider alternative stocks (e.g., Barber & Odean, 2008; Fama & French, 2007). Especially, the role of a priori familiarity with certain companies in deciding one's investments has been explored (e.g., Coval & Moskowitz, 1999; Grullon, Kanatas, & Weston, 2004; Huberman, 2001;

Merton, 1987). The variables of interest related to investment consideration and familiarity will be identified in section 3.1.2.

The third realm of investment behavior variables of interest deals with investment behavior aspects that go *beyond* the financial expectations and considerations altogether. While traditional finance research has been rather silent on such aspects, recent behavioral finance research has begun to recognize that expected financial returns and risks may not entirely determine an investor's willingness to invest in stocks. For instance, Fisher and Statman (1997) remark that it is no more reasonable to assume individuals to be concerned only about risk and return when constructing an investment portfolio than it is to assume them to be concerned only about cost and nutrition when deciding what to eat. Thus, reviewing variables that go *beyond financial considerations* (section 3.1.3) allows me to subsequently theorize how product design -related factors also influence investment behavior beyond financial considerations (section 3.2).

3.1
INVESTMENT BEHAVIOR -RELATED CONSTRUCTS OF INTEREST

3.1.1
FINANCIAL EXPECTATIONS – OPTIMISM AND CONFIDENCE

In the present research framework, I do not focus on (measuring) the financial returns that an investor expects from a company – or risks related to them – in absolute or objective terms. Rather, I focus on subjective aspects of financial return expectations to which behavioral finance researchers have increasingly referred.

Firstly, there is the subjective aspect of optimism. With respect to behavioral finance, the concept of optimism relates to the broader notion whereby it is acknowledged that the financial returns that investors expect from company stocks are not wholly determined by objective mathematical calculation and forecasting of probabilities but also by one's subjective

intuition and sentiments (see e.g., Hirshleifer, 2001; Wärneryd, 2001). In fact, already Keynes (1936) discussed the optimism that people often have in their new investments in companies and referred to "our rational selves choosing between the alternatives as best we are able, calculating where we can, but often falling back for our motive on whim or sentiment or chance" (p. 163).

In effect, we can assume that higher optimism about the financial returns of a company's stock means higher overall financial returns expected from it. In common finance terms, optimism in this sense would mean higher expectancy (or expected mean) value of the company's financial returns and/or lower risk that those returns are perceived to bear[12]. Since expected financial returns (and related risks) are, according to standard finance theory, the fundamental determinant of stock investment choices (Clark-Murphy & Soutar, 2004), we can consequently assume that individual investors' stock investment choices are contingent on potential optimism in their expectations about the financial returns from stocks. In simple terms, the more optimism an investor has about the financial returns of a company's stock, the more attraction he will have towards the stock and the more likely he will invest in it. This makes *an investor's optimism about the financial returns of a particular company's stock* our first construct, or variable, of interest.

Note here that it is beyond the scope of this dissertation to delineate whether optimism always means *over*optimism in the sense of unreasonably high or inflated financial return expectations (cf. Hirshleifer, 2001; Wärneryd, 2001), or the conditions when that is the case. Nor do I focus on optimism as a dispositional or personality character of an investor (cf. Hmieleski & Baron, 2009; Hilton, 2001) – but rather as a phenomenon specific to an individual investor's expectations *of a particular stock*. Thus, I view an investor's optimism about the financial returns of a particular stock

[12] lower risk in the form of lower expected variance of the returns or lower expected probability of really poor/negative returns

as a simple phenomenon that concerns the overall positivity of his expectations about the stock's financial returns and, hence, attraction to it.

Secondly, since it is not only the overall/likeliest level of expected financial returns of a stock (i.e., optimism) that determines, according to finance thinking, one's willingness to invest in the stock but also the perceived risks related to those returns, any framework of investment behavior should explicitly incorporate some risk perception aspects. I choose to refer, in this study, especially to the phenomenon of (over)confidence – which is a perceived risk -related phenomenon to which behavioral finance researchers have increasingly referred (e.g., Daniel, Hirshleifer, & Subrahmanyam, 2001; Dorn & Huberman, 2005; Gervais & Odean, 2001; Glaser & Weber, 2007; Graham, Harvey, & Huang, 2009; Odean, 1998). As Glaser and Weber (2007) note, there is no single definition for (over)confidence in the literature, but most often this concept refers to investors' (over)estimation of the precision of their subjective information about the expected financial returns of stocks (e.g., Gervais & Odean, 2001; Graham, Harvey, & Huang, 2009; Odean, 1998).

In general, then, the higher confidence an investor has in his own expectations about the financial returns of a stock, the lower perceived risk he tends to attach to the returns of the stock (see Glaser, Langer, & Weber, 2007). Thus, confident investors are assumed to perceive less risk in the expected financial returns of a stock than less confident investors. Note that this does *not* imply that higher confidence would automatically mean exactly the same as lower perceived risk. Actually, perceived risk would, in principle, refer to an investor's subjective view of the *probability distribution* (and related standard deviation) concerning how much he expects the financial returns of a stock to deviate from their likeliest mean (or expectancy) value. In contrast, confidence could be understood as the investor's (second-order) belief of the extent to which his subjective view of that probability distribution is correct or precise vs. imprecise or ambiguous (cf. Campbell & Kräussl, 2007; see also Uppal & Wang, 2003)[13].

In any case, we can thus assume that the risks that an investor perceives

to relate to the financial returns of stocks and, hence, his stock investment decisions are also contingent on confidence (and not only optimism) that he has in his own, subjective expectations about the financial returns. Therefore, an investor's *confidence in his expectations about the financial returns of a particular company's stock* becomes another variable of interest to us. Note however, again, that it is beyond the scope of this dissertation to delineate whether confidence always means *over*confidence in the sense of unreasonably high confidence in one's own expectations (cf. Daniel, Hirshleifer, & Subrahmanyam, 2001; Wärneryd, 2001), or the conditions when that is the case. Also note that similarly as for optimism, I do not focus on confidence as a dispositional or personality trait of an investor but as a phenomenon specific to a particular investor's expectations about a particular stock (cf. Deaves, Lüders, & Duo, 2009; Jonsson & Allwood, 2003).

3.1.2
FAMILIARITY AND CONSIDERATION

Economics and finance literatures have traditionally assumed that all the world's stocks and other investment opportunities as well as all relevant information about them are readily available and public for investors (Wärneryd, 2001). Given these assumptions, the mainstream research has not paid much attention to how investors actually end up considering certain stocks as investment targets and compare them with others – in terms of expected financial returns or other terms.

Yet, recent research in behavioral finance (Barber & Odean, 2008; Fama & French, 2007; Getzner & Grabner-Kräuter, 2004; Goldstein, Johnson,

[13] This also means that an individual can be fairly optimistic about the financial returns of a stock, expecting its mean returns value to be high and/or the probable deviations around the mean to be low – but still have rather low confidence in (i.e., doubts about) whether he really has a precise/correct picture of the probability distribution of the returns. The converse situation – relatively low optimism and relatively high confidence – is also possible.

& Sharpe, 2008) has increasingly embraced the idea of viewing stocks as marketed "goods" or "products" – viewing the processes of one's coming to know, considering, comparing, and constructing preferences for stocks with increasing interest. Thus, it has been recognized that stock markets – particularly with the emergence of global, Internet-enabled marketplaces (cf. Zwick & Dholakia, 2006a, 2006b; Zwick, Denegri-Knott, & Schroeder, 2007) – are crowded by thousands of alternative companies and stocks, and individuals face, due to their cognitive limitations, formidable information acquisition and processing problems in choosing which stocks to invest in (Barber & Odean, 2008).

The consequent argument of the extant literature is quite an intuitive one: investors consider purchasing only stocks that have first caught their attention (Barber & Odean, 2008; Odean, 1999). However, mere attention is, in most cases, obviously not likely to lead directly to investment consideration, let alone decision. Rather, an individual will in most cases need to search or have obtained at least certain information on a company that he potentially proceeds to invest in. Behavioral finance research has recognized this by referring to the special role that an investor's *familiarity with a company* often plays. Indeed, it is a fairly established notion that investors tend to prefer and choose to invest in familiar companies – mostly because they have more precise information of familiar (than of less familiar) companies and, thereby, face lower perceived risk to invest in them (Coval & Moskowitz, 1999; Frieder & Subrahmanyam, 2005; Grinblatt & Keloharju, 2000; Grullon, Kanatas, & Weston, 2004; Huberman, 2001; Kang & Stulz, 1997; Merton, 1987). Based on this literature, what should also be true is that if there are two companies that have approximately similar expected financial returns, the more familiar one is preferred due to inherent preference for the familiar (Huberman, 2001) and/or comfort obtained from investing in the familiar (Ackert & Church, 2009).

As a matter of fact, due to the quite widely recognized role of familiarity in deciding people's investment decisions, I choose to present as my first – baseline – hypothesis the following:

> ***Hypothesis Ho***: An investor's familiarity with a company **has positive effect** on his determination to invest in that company's stock rather than other companies' stocks (that have approximately similar expected financial returns/risks).

I present this hypothesis already at this point, indeed, because of the prominence of the familiarity argument in earlier behavioral finance literature. My main product design -related, new propositions will be developed later (section 3.2) and naturally go beyond mere company familiarity.

In addition to the rather static concept of an investor's familiarity with a company, another relevant construct pertaining to the investment decision process is the more dynamic concept of consideration of alternatives. Specifically, I pay attention, in the present framework, to the degree of consideration that an investor, who ponders whether to invest in a particular company, gives to alternative companies or investment targets. Fundamentally, the relevance of this degree of consideration relates to the well-established notion that individuals limit in investment choice setting – as in any other choice setting – the amount of information-processing over alternatives, in order to be able to reach a decision. This notion is, indeed, the underlying assumption in the view that people use "heuristics" in reaching decisions, so as to avoid endless gathering of further information on and deliberation over innumerable alternatives (e.g., Gigerenzer, Todd, & ABC Research Group, 1999; Kahneman, Slovic, & Tversky, 1982; Simon, 1955, 1957, 1979).

At the one extreme, an individual might choose to make an investment in a given company that just crosses his mind – without any consideration given to any alternatives. At the other extreme, an individual might not be able to reach a decision in his investment decision-making due to not being able to cease consideration of one company – and its pros and cons – over others. Seen from the perspective of a company (which engages in product design), it will generally be advantageous if investors reach the decision to invest in it earlier rather than later or not at all. Therefore, the degree of *consideration given to alternative investment opportunities* (than the focal company) is a construct, or variable of interest, too.

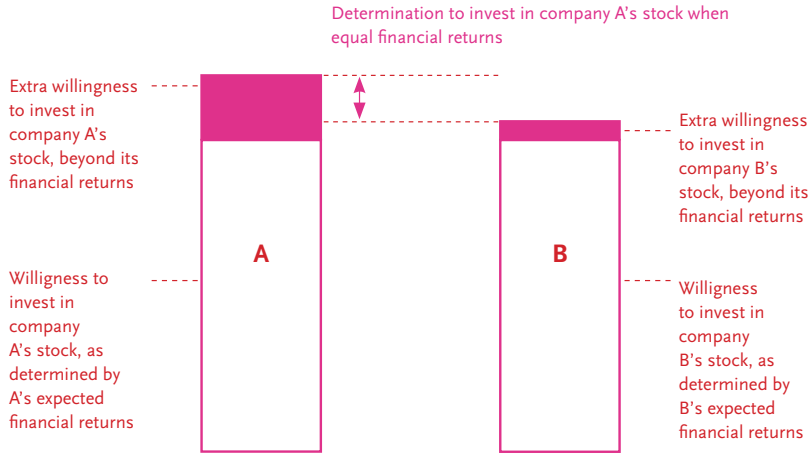
3.1.3
EXTRA INVESTMENT WILLINGNESS, BEYOND FINANCIAL RETURNS

As implied above, most finance theory traditionally assumes that having formed expectations about the financial returns of investments, a rational investor – in order to invest a given amount of money in a certain stock – requires that stock to have a better profile of expected returns (and perceived risk) than others (Clark-Murphy & Soutar, 2004). On one hand, it is assumed that given a choice between stocks of two or more companies with equal expected return-risk profiles, an individual investor would be indifferent to which to choose.[14] On the other hand, the assumption is that given a choice between two or more equally risky stocks, an individual would categorically prefer and choose to put his money in the one with the highest expected returns.

Yet, again, more recent behavioral finance research has begun to recognize that the expected financial returns and risks may not entirely determine an investor's willingness to invest in stocks – just as cost and nutrition do not entirely determine what they are willing to eat (Fisher & Statman, 1997). Thus, even if it is assumed that *most* of one's willingness to invest in a certain company's stock is determined by the expected financial return-risk profile of the stock, one may have an additional component of investment willingness determined by other factors. Let us call this additional component the "extra willingness to invest in a stock, beyond its financial returns".

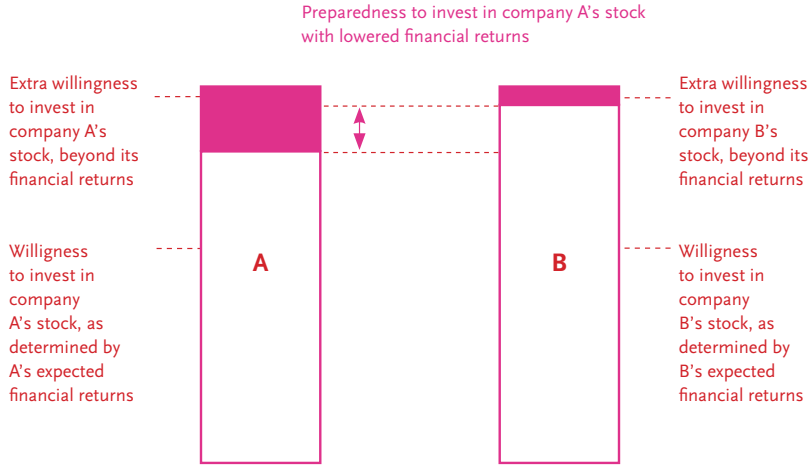
Specifically, two variables pertaining to one's extra willingness to invest in a stock beyond its financial returns are of special interest. First, consider a situation whereby an individual perceives two or more stocks to have approximately equal financial returns and risk. In case the individual has no extra willingness to invest in any of these stocks, he should be equally willing to

[14] In fact, due to the indifference, it might be difficult for the investor to make the decision which stock to invest in – to make up his mind.



Note. Assume that a person invests in company A's stock.

Figure 2.
Illustration of the construct "determination to invest in company A's stock when it has equal expected financial returns as another stock B".



Note. Assume that a person invests in company A's stock.

Figure 3.
Illustration of the construct "preparedness to invest in company A's stock with lowered financial returns".

invest in each of them – and, hence, indifferent to which to choose. Nevertheless, to the extent that the individual still makes the decision to invest in one of the stocks, say stock A, he evidently has a certain degree of *determination to invest in company A's stock when it has equal expected financial returns as another stock B*. This variable of interest should run from total indifference to whether to invest in A or B, to the other extreme of total determination to invest in A even if B has equal expected financial returns.

Second, an individual's extra willingness to invest in a certain company A's stock beyond its financial returns may even manifest in his *preparedness to invest in company A's stock with lowered financial returns*. Clearly, if an individual decides to invest in company A's stock even if he expects it to have a bit lower financial returns – at a given risk level – than company B's stock, the individual has obviously some extra willingness to invest in company A's stock beyond its financial returns. Note that extant research on investors' preparedness to give up on some financial returns so as to invest in certain kind of companies – a quite radical idea for standard finance research – is sparse. There have been some suggestions that investors may obtain certain self-expressive, emotional, or experiential utility or benefits (Fama & French, 2004; Kahneman, Wakker, & Sarin, 1997; Statman, 2004), or psychic return (Beal, Goyen, & Phillips, 2005; Cullis, Lewis, & Winnett, 1992), from investments in e.g. socially responsible companies' stocks or stocks of companies based in their home country – making some investors potentially satisfied with lower financial returns from such stocks. Indeed, in the present research, I examine how a company's product design might elicit similar behavioral patterns.

Figures 2 and 3 illustrate these two final variables of interest. The Figures assume that an individual will eventually invest (or has invested) in a company A's stock over another company B's stock. In Figure 2, the white parts of the two columns represent one's willingness to invest in company A's and company B's stock, respectively, as determined by the stocks' expected financial returns. These white parts are of equal height, suggesting that the expected financial returns of A and B are equal. The assumed investor has,

additionally, extra willingness to invest in both company's stocks, beyond their financial returns. However, the investor's extra willingness to invest in company A's stock is greater than his extra willingness to invest in company B's stock. The difference between the sizes of these extra willingness components will, in this case, constitute our variable of interest, *determination to invest in company A's stock when it has equal expected financial returns as another stock B* – assuming that the investor ends up investing in company A's stock.

In Figure 3, in turn, the white parts of the columns represent, again, an investor's willingness to invest in the companies' stocks, as determined by the stocks' expected financial returns. Now, the expected financial returns of company B's stock are evidently greater than those of company A's. However, the investor has extra willingness to invest in company A's stock – enough to make his total willingness to invest in company A's stock (white part + colored part) slightly greater than his total willingness to invest in company B's stock. The difference between the sizes of these extra willingness components will, in this case, constitute our second variable of interest, *preparedness to invest in company A's stock with lowered financial returns* – assuming that the investor ends up investing in company A's stock. In effect, the investor in this case, in a way, gives up on the corresponding amount of (expected) financial returns in order to invest in A rather than B.

3.2
PRODUCT DESIGN INFLUENCES ON INVESTMENT BEHAVIOR

While the previous sections (3.1.1 – 3.1.3) identified the specific investment behavior -related variables of interest in the present research, this section will develop the main theory of this dissertation – concerning the mechanisms by which investors' behavior (i.e., the variables identified above) will be influenced by product design -related factors. The main product design -related factors theorized are the (1) personal relevance that an investor

attaches to a certain domain(s) which the company's products are perceived to represent or support and (2) the investor's overall affect for, or affective evaluation of, the company's product design.

To be able to follow the theory/hypothesis development more conveniently, the reader can refer to Figure 4 and Figure 5 on pages 61–62, which will summarize the hypotheses into two models. The hypotheses are divided between the two Figures on the basis of what kind of investment behavior variables they pertain to. Specifically, Figure 4 focuses on those hypotheses that address the effects of investors' product design -related perceptions and evaluations on their financial expectations (i.e., the variables of interest introduced above in section 3.1.1: optimism and confidence) as well as on their consideration about the companies' stocks (i.e., the variable introduced in section 3.1.2: consideration given to alternative investment targets).

Figure 5, in turn, focuses on those hypotheses that address the effects that investors' product design -related perceptions and evaluations potentially have on their investment decisions beyond financial returns expected from companies' stocks (i.e., the variables introduced in section 3.1.3: determination to invest in a company's stock rather than in another stock that has similar expected financial returns; preparedness to invest in a company's stock with lower financial returns).

Note that the effects of/on *familiarity* (cf. section 3.1.2) are present in both Figures.

3.2.1
PERSONAL RELEVANCE OF THE DOMAINS REPRESENTED BY A COMPANY'S PRODUCTS

In this section, I develop hypotheses concerning how the *personal relevance* that individuals attach to domains (of life) which a company's products represent will influence their investment behavior, or behavioral tendencies, towards that company's stock.

First of all, it is a commonplace notion in product design and develop-

ment research (e.g., Battarbee & Mattelmäki, 2002; Battarbee & Koskinen, 2005; Kreuzbauer & Malter, 2005; Normann & Ramírez, 1993; Verganti, 2006) as well as in wider consumer, marketing, and sociological research (e.g., Bloch & Richins, 1983; Csiksentimihalyi & Rochberg-Halton, 1981; Ligas, 2000; Michaelidou & Dibb, 2006; Richins, 1994b) that people attach subjective meanings to products and potentially value the product because of those meanings (rather than strictly because of objective product attributes). The assumption is usually that such product meanings – when involving perceptions of personal value – lead to purchases of and/or pleasurable use experiences with the products. Now, my intention is to present a theoretical mechanism that explains how certain product-related meanings can also lead to willingness to invest in the stock of a company that designs and produces the products.

A central, underlying mechanism here relates to the degree of personal relevance attached to a company's products. Notably, personal relevance is a phenomenon to which consumer researchers often refer when studying people's "involvement" with products and issues in general. Indeed, albeit that the involvement concept in itself has been subject to ambiguity (see Antil, 1984; Bloch & Richins, 1983; Mittal, 1995; Zaichkowsky, 1985, 1994), it is mostly agreed that involvement essentially has to do with the personal relevance, importance, and/or interest that a person attaches to a certain object.

Moreover, although some assume that there may exist products which are inherently "high-involvement products", "high-importance products", or "high-relevance products", Antil (1984) notes that "it is not the product per se that is involving, but the personal meaning or significance the individual attributes to the characteristics of that product that results in involvement" (p. 204). Moreover, I specifically focus on personal relevance as implicated in enduring (or ego-)involvement. In enduring involvement, the personal relevance of a product reflects its being related to the individual's identity, self-image, or self concept – and, therein, his personally important interests, needs, and values (Bloch, 1981; Celsi & Olson, 1988; Zaichkowsky, 1985);

(leisure) activities (Celsi & Olson, 1988; Havitz & Dimanche, 1997; Havitz & Mannell, 2005); and/or "ideals", "themes" and "projects" of life in general (Coulter, Price, & Feick, 2003; Huffman, Ratneshwar, & Mick, 2000).

Thus, there are actually two aspects to the phenomenon to consider. First, there is (i) the degree of personal relevance of a certain activity, area of interest, theme, or ideal to an individual and his identity – i.e., his identification with it. Note that from now on, I refer to such activities, areas of interest, themes, and ideals – ones to which an individual may attach a degree of personal relevance – with the single term "life domain" (or simply, "domain"). Second, there is (ii) the degree to which an individual perceives certain products to represent or support the domain. Both of these aspects may and will vary from individual to individual (Laaksonen, 1994).

In any case, there are two main ways in which the personal relevance of (life) domain(s) supported by certain products can lead to willingness to invest in the stock of a company that designs and produces the products. The first relates to (a) information-processing and the second to (b) self-expression.

a) information perspective. The first notable aspect of the personal relevance that an individual attaches to a certain life domain is the fact that it motivates the individual to acquire and process information related to the domain – learn about it. Especially in involvement research, there is ample evidence that perceived personal relevance of a product's domain motivates a person to engage in (intentional) ongoing search of information concerning the domain – as well as increases one's subjective attention to incoming information that concerns the domain (Bloch, Sherrell, & Ridgway, 1986; Petty, Cacioppo, & Schumann, 1983; Schmidt & Spreng, 1996). One implication of this is that the personal relevance of a domain can be expected to increase one's likely knowledge of and familiarity with the domain and, further, product categories and products related to the domain (see Alba & Hutchinson, 1987). Thus, my first hypothesis about the personal relevance is:

> ***Hypothesis H1:*** The personal relevance that an investor attaches to a certain life domain **has positive effect** on his familiarity with products that are perceived to represent or support the domain.

What can be further expected is that one's familiarity with a certain product or certain products, in turn, likely increases one's familiarity with the company that designs and produces those products. Of course, it is not always the case that a person is aware of or familiar with the company that produces a given product (such as Amer Sports Corporation as a producer of Suunto watches), but the general tendency of greater company familiarity following from familiarity with the company's products is probable. In other words:

> ***Hypothesis H2:*** An investor's familiarity with a particular company's products **has positive effect** on his familiarity with the company.

Note that the above hypotheses actually suggest one subjective process of how an investor may, in the first place, become aware of and familiar with a certain company. Familiarity with a company, in turn, is important because it is – as proposed in hypothesis H0 (p. 37) – often a determinant of a decision to invest in the company (e.g., Coval & Moskowitz, 1999; Frieder & Subrahmanyam, 2005; Grullon, Kanatas, & Weston, 2004; Huberman, 2001; Merton, 1987). Indeed, these hypotheses together suggest how a company may initially come to catch one's subjective attention as a potential stock investment target, even if the stock was not objectively a stock of high visibility (cf. Barber & Odean, 2008; Gervais, Kaniel, & Mingelgrin, 2001). Namely, an investor may be(come) familiar with a certain company – and start to consider it as an investment target – as a consequence of the fact that the company's products represent a domain which is personally relevant to the investor and which he therefore has (and obtains) lots of knowledge about. For instance, an investor who finds motoring or car-driving as a personally highly relevant domain is likely to be(come) familiar with

companies whose products support or represent car-driving (such as car companies, tire companies, etc.) – and invest in such a company partly due to the familiarity.

Moreover, besides familiarity, the present research is also to address the level of consideration given to a particular stock before it is purchased vis-à-vis consideration given to alternative stocks. With respect to this consideration, we might expect – based on the extant finance research – that one's familiarity with a particular company, or its products, decreases the consideration given to alternative companies when one has that company available for investment. Namely, an individual's familiarity with a particular company's products might make him feel that he has a special information advantage to consider investment in that company rather than in other (less familiar) companies (Frieder & Subrahmanyam, 2005; Klein & Bawa, 1976, 1977; Merton, 1987). Also, the individual might have heightened confidence in his own expectations about the familiar company's financial returns (Barber & Odean, 2001, 2002; Kang & Stulz, 1997; Li, 2009) – which in turn would have negative influence on the consideration he gives to alternative investment targets. Thus, based on finance research, the following hypotheses can be presented (as null hypotheses), accounting both for a potential direct effect of familiarity (H3.0) and an indirect one through confidence (H4.0a and H4.0b):

> ***Hypothesis H3.0:*** An investor's familiarity with a particular company's products **has negative effect** on the consideration that he gives to other companies as alternative investment targets.

> ***Hypothesis H4.0a:*** An investor's familiarity with a particular company's products **has positive effect** on the confidence that he has in his own expectations about the financial returns of the company's stock.

> ***Hypothesis H4.0b:*** The confidence that an individual has in his own expectations about the financial returns of a particular company's

stock **has negative effect** on the consideration that he gives to other companies as alternative investment targets.

Nevertheless, these notions derived from the mainstream of behavioral finance, do not hold necessarily. First of all, consumer research on the role of prior knowledge in purchase settings has argued that that prior knowledge may actually encourage further information search by making it easier and less costly to process new information (Gursoy & McCleary, 2004; Rao & Sieben, 1992). For instance, the knowledge of a company's product attributes may allow the individual to formulate more specific questions (to himself) about the company as an investment target, relative to alternative investments targets in the same or other industries. Consequently, the investor may be motivated to exercise more information search and consideration *both* on the focal company in question *and* its alternatives (cf. Gursoy & McCleary, 2004). Likewise, relatively wide and heterogeneous prior knowledge of a company's product attributes – and the questions it helps to raise – may actually decrease the investor's confidence in his initial expectations of the company's financial returns.

Second, familiarity with a particular company's products may reflect broader familiarity with the kind of products in question, perhaps even outright expertise in the product category (see Alba & Hutchinson, 1987; Brucks, 1985). Accordingly, one may have increased awareness of competing companies in the same category, as well, and about the most important product-related attributes to consider in the investment decision-making across the competitors (cf. Alba & Hutchinson, 1987). In addition, to the extent that the familiarity with a particular company's products stems from personal relevance of the life domain represented by the products, the individual may be motivated to find out the strengths and weaknesses of possible alternatives in more detail, as well as more carefully attend, process, and comprehend relevant information (Celsi & Olson, 1988; Chaiken, 1980; Chaiken, Liberman, & Eagly, 1989; Kim, Scott, & Crompton, 1997).

In sum, the above discussion, in fact, enables the presentation of the

following alternative hypotheses to the ones above (H3.0, H4.0a):

> ***Hypothesis H3.1:*** An investor's familiarity with a particular company's products **has positive effect** on the consideration that he gives to other companies as alternative investment targets.

> ***Hypothesis H4.1a:*** An investor's familiarity with a particular company's products **has negative effect** on the confidence that he has in his own expectations about the financial returns of the company's stock.

b) self-expression perspective. Beyond the contribution of the perceived relevance of a company's product domain to an investor's information processing about investment alternatives, personal relevance may also influence the consideration he gives to the alternatives through self-expressive tendencies of the investor. The underlying theoretical argument is the following. First of all, if one perceives a certain domain as personally relevant, one will – as suggested above – identify with the domain and perceive it congruent with one's self or identity (or have "self-affinity" for it; see Aspara et al., 2008). What an individual's identification with or affinity for a certain object (domain), in turn, does is that it arguably leads to his willingness to give supportive treatment to the object and/or cooperatively give more of his scarce resources to its service (Bhattacharya & Sen, 2003; Scott & Lane, 2000; Aspara et al., 2008).

The present application of this argument is that one way through which a person can give such supportive treatment (and his scarce resources) to a certain personally relevant life domain is *through investment in such a company that designs and produces products that represent the domain*[15]. It can be expected, for example, that an investor who finds motoring or car-driving a life domain that is personally relevant to him (i.e., his identity) is willing to support this domain by investing in a company(/ies) whose products support or represent car-driving (such as car companies, tire companies, etc.). Similarly, an investor who finds gardening a personally relevant domain

can be expected to have willingness to support that domain by investing in a company whose products represent gardening (such as a company designing garden tools).

Thus, when an individual is in the course of considering companies for investment purposes, his viewing a particular company's products as being supportive or representative of a domain which he perceives personally self-relevant may increase his propensity to choose that company as investment target – and, hence, express his self or identity through the investment. Note that the possible existence of such "self-expressive" investment choices has been marginally speculated about in recent behavioral finance research, as well (Statman, 2004).

Now, regarding the consideration given to alternative investment targets, the potential self-expression manifesting in the investment choice can be expected to be consideration-*decreasing* – as already the term "(self-) *express*" suggests. In other words, a person's final investment decision may be determined relatively swiftly in favor of one company that has products expressive of one's self – especially when there is a set of companies under consideration with approximately similar expected financial returns. Thus, at the same time as further consideration of alternatives would be cut short, such self-expression -based choice would most likely manifest in one's determination to invest in one stock over alternatives with approximately similar expected financial returns[16]. Thus, my hypotheses are:

> ***Hypothesis H5:*** The personal relevance that an investor attaches to a certain life domain that a particular company is perceived to represent with its products **has negative effect** on the consideration that he gives to other companies as alternative investment targets.

[15] Other ways to give supportive treatment to the personally relevant life domain might be e.g., voting for a person or party (in elections) that supports the domain; volunteering in a community that supports the domain; seeking a job or career where one can cherish the domain; and, of course, buying and using products that support or represent the domain.

[16] This is consistent with what has been called the principle of self-affinity for an object eliciting choice over similar alternative behaviors (Aspara et al., 2008).

Hypothesis H6: The personal relevance that an investor attaches to a certain life domain that a particular company is perceived to represent with its products **has positive effect** on his determination to invest in that company's stock rather than other companies' stocks which have approximately similar expected financial returns/risks (but which are not perceived to represent the domain in question with their products).

In a way, the above propositions suggest that a positive attitude towards a certain domain that stems from the individual's self(-concept) is likely to manifest in his investment decision(s), as well, as a preference for a company whose products support or represent that domain. The effect of personal, product-related attitudes on investment preferences has earlier been demonstrated by Getzner & Grabner-Kräuter (2004) – yet only in regards to one's attitude towards "green products" correlating with one's preference for "green shares" (and not more generally, as I suggest here). Moreover, what the above propositions also imply is that in case two (or more) companies are expected to have the ability to yield an approximately equal amount of money to the investor, the investor would call the final investment decision based on *how* the company makes its money – in terms of what kind of domains its products support or represent. In general, there is some extant research that speculates about such "profits-with-principles" motivations of investors – i.e., their caring not only about *how much* money is made but also about *how* it is made (cf. Jackson & Nelson, 2004; Nelson, 2005; Nilsson, 2008; Schueth, 2003; Getzner & Grabner-Kräuter, 2004). However, these extant pieces of literature have concentrated, again, on "ethical investing", "socially responsible investing", or "green investing", while the present propositions suggest that investors may have investment principles related to the personal relevance and appeal (rather than ethicality) of companies' product domains, as well.

Furthermore, the self-expressive motivation may not only determine an individual's investment decision in favor of one company over others that have approximately similar expected financial returns. But – it may

even make an individual satisfied with lower financial returns from the focal company's stock than from others. Namely, insofar as one's perceived personal relevance of a domain leads to the aforementioned willingness to give supportive treatment to a domain (and one's scarce resources to its service) in the form of investing in a company whose products represent the domain, one may not "need" or "require" absolutely maximal financial returns from such a company so as to still invest in it. After all, one has the extra willingness to invest in the company – stemming from the willingness to give support to the domain – on top of the willingness to invest that is determined by the "mere" expected financial returns (see Figure 3, p.39).

Indeed: as one will obtain self-expressive, emotional benefits from investing in the stock (Statman, 2004; see also Aspara, 2009; Aspara & Tikkanen, 2008), one will not need as high financial benefits from the stock and still be prepared and willing to invest in it. For instance, given the severe financial problems recently faced by the auto industry, it seems obvious that many investors have been prepared to invest in car companies even if the financial returns of these companies have not seemed very promising. According to the theory presented here, this preparedness could be (at least partially) explained by the fact that motoring/car-driving is highly relevant domain to certain investors[17]. In terms of Patrick Jordan (2002) – a much-cited design scholar – the question would be of obtaining "ideo-pleasure" from investing in the stock of a company whose products support or represent a personally relevant and valued domain. Yet, besides reflecting mere ideo(logical) pleasure, such an investment motivation may also be considered semi-rational (from the investor's subjective point of view). Namely, by investing in a company whose products support or represent a personally valued domain (e.g., a sport), one can aim to participate in advancing the viability and development of that domain – of which one can oneself (later) benefit in terms

[17] Of course, the main reason is likely to be that investors think that the auto companies will, after all, pull themselves out of the financial crisis and eventually start to earn decent profits.

of better quality of life (e.g., better sport equipment and sport experiences). Thus, my further hypothesis is:

> ***Hypothesis H7:*** The personal relevance that an investor attaches to a certain life domain that a particular company is perceived to represent with its products **has positive effect** on his preparedness to invest in that company's stock even with lower financial returns expected from the stock than from other companies' stocks (which are not perceived to represent the domain in question with their products).

To extend the adage mentioned earlier, this proposition suggests that an investor's evaluation of *how* (or the context in which) a company makes its money – especially the extent that its product domain is personally relevant – may even lead him to invest in the company by relaxing a bit on his requirements concerning *how much* money is made. That is, the investor may not require absolutely maximal financial returns, inasmuch the company's product domain is personally relevant. Note that extant behavioral finance research has – in the context of ethical and socially responsible investing – also implied about an investor's potential preparedness to give up on some of financial returns, so as to invest in "green", "ethical", or "socially responsible companies" (e.g., Beal, Goyen, & Phillips, 2005; Cullis, Lewis, & Winnett, 1992; Getzner & Grabner-Kräuter, 2004; Statman, 2004). Nevertheless, my theory essentially extends this argument to companies whose products are perceived to support or represent certain personally relevant domains (whatever they are).

Finally, it should be noted that the pursuit of the preferential and supportive treatment and giving of scarce resources to the company's product domain through stock investment may be unconscious and/or conscious. Accordingly, I recognize that the hypothesized effects (H6 and H7) may be direct as well as indirect, i.e., manifest directly and/or through the mediating variable of one's (conscious) *willingness to support the company, by investing in its stock*. Indeed, including this mediating variable in the analysis enables

verification of the very premise – stemming from the identification and self-affinity theories – that the influence of identification on one's behavior occurs partly through one's willingness to give supportive treatment to the object of identification.

3.2.2
OVERALL AFFECT FOR A COMPANY'S PRODUCT DESIGN

In this section, I develop hypotheses concerning how investors' *overall affect for a company's product design* will further influence their investment behavior, or behavioral tendencies, towards that company's stock. Here, there are three main ways of potential influence: the role of affect (a) in selection heuristics, (b) in psychology of possessions, and (c) in financial expectations.

A) SELECTION HEURISTIC PERSPECTIVE. Somewhat independent of the degree of personal relevance attached to life domains represented by a company's products, an individual investor may have positive (or negative) overall evaluation of the company's product design. As increasingly acknowledged even by economics and finance literatures (Slovic et al. 2002a, 2002b, 2007), an individual's affective evaluation of any object (such as a company or the product design of a company) involves affect attached to the perception of the object (Zajonc, 1980; see also Damasio, 1994, 2003). This affect can be considered to mean the specific quality of "goodness" vs. "badness" experienced as a feeling state (with or without consciousness) and demarcating a positive or negative overall quality of the object. As such, the affective evaluation is like an overall (valenced) attitude: an index of the strength of how much a person likes or dislikes the object (Ajzen & Fishbein, 1980), a summary evaluation of the object on bipolar dimensions of positive vs. negative impressions, such as good–bad, pleasant–unpleasant, likeable–dislikeable, attractive-unattractive (Ajzen, 2001).

Notably, feelings of goodness, pleasantness, and attractiveness evoked by products (rather than their mere appearance/good-lookingness or

technical functionality) are also the main evaluative dimensions for products in contemporary design research (e.g., Jordan 2002; Norman, 2004). Nevertheless, instead of being interested in consumers' or users' evaluations of products along these dimensions – like design research usually –, we are expressly interested in investors' evaluations of companies' products along the same dimensions. Thus, what is at stake here is: How positively does an investor evaluate a company's product design? How good, pleasant, and attractive does the investor find the company's product design to be overall?

In effect, evaluative images, marked by positive and negative affective feelings, guide human judgments and decision making, along with (rational) thinking and reasoning (Damasio, 1994; Slovic et al. 2002a, 2002b, 2007; Zajonc, 1980). Therefore, images and affective evaluations of companies may be a major basis on which individuals make investment decisions, as well (MacGregor et al., 2000). Notably, since an individual's ability to have information of and rationally judge and calculate all the 'pros' and 'cons' of various alternative stocks in terms of future financial returns is very limited, the influence of affect will be further emphasized.

Indeed, people are generally able to make only very rough approximations of the return-risk profiles of alternative stocks. During investment considerations, therefore, an individual may simply prefer and select to invest in the stock of a company that he happens to like the most – or the product design of which he likes the most – over alternative stocks which have approximately similar returns-risk profiles. Slovic et al. refer to this kind of decision-making as the use of "affect heuristic" (Slovic et al. 2002a, 2002b, 2007; Finucane et al., 2000). Specifically, rather than spending more of his limited (mental and other) resources on conducting more and more information search of and consideration over the various alternative investment opportunities that have approximately similar financial return-risk profiles, an investor likely tends to use his readily available affective impressions of companies so as to arrive at his final investment choice. This kind of reliance on the affect heuristic – shortcutting investment choices in favor of compa-

nies of which one has positive affective impressions – can also explain why investors often seem think that "good companies" (i.e., companies with good reputation) are good or preferable investment targets as well (De Bondt,1998; Shefrin, 2001, 2002; van der Sar, 2004; Shefrin and Statman, 1995).

The core argument concerning product design, here, is that an individual's positive affective evaluation of a company's products is likely to centrally contribute to his overall affective impression of the company itself and, thereby, to the potential use of affect heuristic in shortcutting the investment decision in favor of the company's stock (see also Aspara et al., 2008; Aspara & Tikkanen, forthcoming). In other words, hence, my hypothesis is that investors have a tendency to view that "good-design companies" are good/preferable investment targets, as well – with increased determination to invest in such companies and tendency to shortcut consideration of alternatives. Thus:

> ***Hypothesis H8***: An investor's positive overall affect for a particular company's product design **has negative effect** on the consideration that he gives to other companies as alternative investment targets.
>
> ***Hypothesis H9:*** An investor's positive overall affect for a particular company's product design **has positive effect** on his determination to invest in that company's stock rather than other companies' stocks which have approximately similar expected financial returns/risks.

Notably, the above hypotheses are also in line with the (social) psychology notion that an individual who has a positive overall attitude (and, thereby, affect) towards an object – here, a company's product design – will have a predisposition to behave in a *consistently* favorable way with respect to the object (Fishbein & Ajzen, 1985; Zajonc, 1980). Indeed, due to psychological drive to maintain "attitude-behavior consistency" (e.g., Abelson et al., 1968; Festinger, 1957), it can be expected that an individual who has positive affect for a company's product design will not only e.g. talk favorably about the products (and perhaps buy or use them) but also express his positive affect

by deciding an investment decision in favor of the company[18]. This should be true at least when alternative investment opportunities have similar (i.e., not clearly better) expected financial returns (Aspara & Tikkanen, 2008), as proposed above.

b) possession perspective. What is to be further noted regarding the role of affect in investments (i.e., beyond simple affect heuristics and attitudinal consistencies) is that one's special affect towards something may even lead to outright *desire to possess it*. This has been suggested by social psychologists and sociologists studying people's fondness of personal collections. Specifically, it has been shown, in collection literature, that people often have the need and motivation to own and surround themselves with objects towards which they have special affect (Danet & Katriel, 1989; Pearce, 1994). Collection researchers also explicitly note the close relationship between one's affection for an object, on one hand, and will to possess the object, on the other – possession being a way to acquire felt dominance over the liked object through making it, in a sense, one's personal belonging (Danet & Katriel, 1989; cf. Tuan, 1984).

I extend this theory about possessions to a company's product design by viewing a company's product design as a potential object that an individual can attempt to "collect", or possess – by way of owning the stock of the company behind the design[19]. For instance, for an investor that really likes Ford's product design, ownership of Ford Motor Company's stock can be partially motivated by such a collection or possession motive. Thus, it may be that having a stronger affective evaluation of a company's product design results in some degree of outright desire to possess the company, by way of investing in and owning the company's stock. Notably, having such intrinsic desire to possess the company due to the partial collection motivation may, in turn, manifest, again, not only as determination to invest in the company's stock rather than other stocks with equal financial returns (hypothesis H9) but also in the individual's preparedness to invest in the company's stock with lowered financial returns. Thus, my additional hypothesis is:

Hypothesis H10: An investor's positive overall affect for a particular company's product design **has positive effect** on his preparedness to invest in that company's stock with lower financial returns expected from the stock than from other stocks.

Again, this proposition suggests that an investor's evaluation of *how* (or the context in which) a company makes its money – now especially the extent that its product design is likeable overall – may lead him to invest in the company by relaxing a bit on his requirements concerning *how much* money is made.

Note that also the hypothesized effects of affective evaluation of a company's product design (H9 and H10) may, again, be either direct, or channeled indirectly through (conscious) willingness to support the company by investing in its stock. Accordingly, tests of this mediating effect, besides the direct effects, will be included in my analysis (see Figure 5, p. 62).

c) financial expectations perspective. Finally, not only may an investor's affective evaluation of a company's product design influence the consideration he gives to alternatives and/or willingness to invest in the company's stock beyond financial returns, but it may also affect his actual expectations of the financial returns from the company's stock. Concerning industry groups, MacGregor et al. (2000) found that individuals' judgments of the financial performance of industries are strongly related to affective evaluations of them. Although MacGregor et al. (2000) focus primarily on

[18] In fact, should the individual *not* prefer – in an investment decision – the company for the design of which he has positive attitude, he might end up feeling cognitive/affective "dissonance". By default, individuals tend to avoid ending up feeling such dissonance (Festinger, 1957; Zajonc, 1980) – thus, favoring the company in the investment decision could also be understood as a (psychological) strategy of avoiding dissonance feelings.

[19] Of course, a more common way to "collect" a company's product design is to purchase and collect its products per se (cf. Fournier 1998). At any rate, collecting the products per se and the stock of the company designing/producing the products are phenomena that can well co-exist.

affective evaluations of industry groups and expectations of their financial performance, they also suggest that a company with highly positive affective evaluation is likely to be seen as good in terms of specific attributes such as prospects for long-term financial success.

As an explanation to the above findings, Frieder and Subrahmanyam (2005) suggest that individuals may (naively) interpret a company's product quality to automatically predict superior financial return performance for the company. Such an interpretation may also involve the possibility that the investor somewhat boldly assumes that "since I like the company's product design, other people will like it, too, and the company is therefore likely to succeed financially" (Aspara & Tikkanen, 2008). Moreover, an investor may even assume that firms with good quality products are well-run firms and therefore expect superior financial investment performance of them (see also Lakonishok, Shleifer, & Vishny, 1994). In any case, positive overall evaluations of a company's product design are likely to generate optimism about the financial returns of the company's stock and/or (more or less naïve) confidence in one's financial expectations. Thus, I hypothesize:

> ***Hypothesis H11:*** An investor's positive overall affect for a particular company's product design **has positive effect** on the optimism in his expectations about the financial returns of the company's stock.

> ***Hypothesis H12:*** An investor's positive overall affect for a particular company's product design **has positive effect** on the confidence he has in his own expectations about the financial returns of the company's stock.

3.2.3
INTERDEPENDENCIES

Along with the effects hypothesized above, there are likely to be further interdependencies or feedback effects between the identified constructs. Most importantly, the personal self-relevance that an individual attaches to a domain is likely to have positive influence on his affective evaluation of the product design of a company that is perceived to support or represent the domain with its products. This is logical, and has been suggested by e.g. myself and colleagues elsewhere (Aspara et al., 2008) on the basis of identification and self-congruency theories. For instance, if an investor finds motoring/car-driving as a personally relevant domain, he is likely to have positive baseline affect for a company whose products represent or support that domain (e.g. a car company, a tire company). Similarly, if an investor finds gardening as a personally relevant domain, he is likely to have baseline positive affect for a company whose products represent or support that domain (e.g. a gardening tool company).

Thus, my last hypothesis, at this point, is:

> ***Hypothesis H13:*** The personal relevance that an investor attaches to a certain life domain has positive effect on his overall affect for the product design of a company whose products are perceived to represent the domain.

3.2.4
REVIEW OF HYPOTHESES

Figures 4 and 5 illustrate all the hypotheses proposed above. I have divided the hypotheses into the two figures on the basis of what kind of investment behavior constructs they pertain to. Specifically, Figure 4 focuses on those hypotheses (H1, H3-H5, H8, H11-H12) that address the effects of an investor's perceptions and evaluations of a company's product design on his *financial expectations* about a company's stock (optimism and confidence

about financial returns) as well as on *consideration* given to alternative investment targets. Figure 5, in turn, focuses on those hypotheses (H2, H6-H7, H9-H10) that address the effects that an investor's product design -related perceptions and evaluations potentially have on his investment decision *beyond* the financial returns expected from the company's stocks.

The effects of *familiarity* with the company (H0) are present only in the model of Figure 5, so that the model of Figure 4 would remain simpler. The partial interdependency between personal relevance of a company's product domain and overall affect for the company's product design (H13) is, in turn, present in both the models.

At any rate, in both Figures, the main explanatory constructs are notably the same (indicated by the colored "balloons"). These explanatory constructs pertain to the investor's product design -related perceptions and evaluations. They include an investor's overall affect for the company's product design (balloon 1) – and the degree of personal relevance that the investor attaches to a certain life domain (balloon 2.i), as combined with perception that the company's products represent/support that life domain (balloon 2.ii). Note that the distinction of balloons 2.i and 2.ii, reflects the theoretical distinction made earlier (p. 44): There is the (i) the degree of personal relevance that the investor attaches to a life domain, on one hand, and (ii) the degree to which he perceives the products to represent or support that domain, on the other. Moreover, familiarity with the company's products (balloon 3) is included in both models.

Notably, the Figures could be superimposed so that all the hypothesized effects of these constructs could be seen at once. Yet, I have chosen to present the hypothesized effects with two separate figures, as depicting them all in one figure results in an overly complicated, difficult-to-read framework.

While Figures 4 and 5 illustrate the main hypotheses of this dissertation (and will be studied with empirical path models of Studies 1a and 1b, corresponding to the Figures), I will present one more hypothesis, which is a *corollary* to the hypotheses proposed thus far. That is, a hypothesis about an effect that can be expected to follow given the (accuracy of) the hypothesis presented so far.

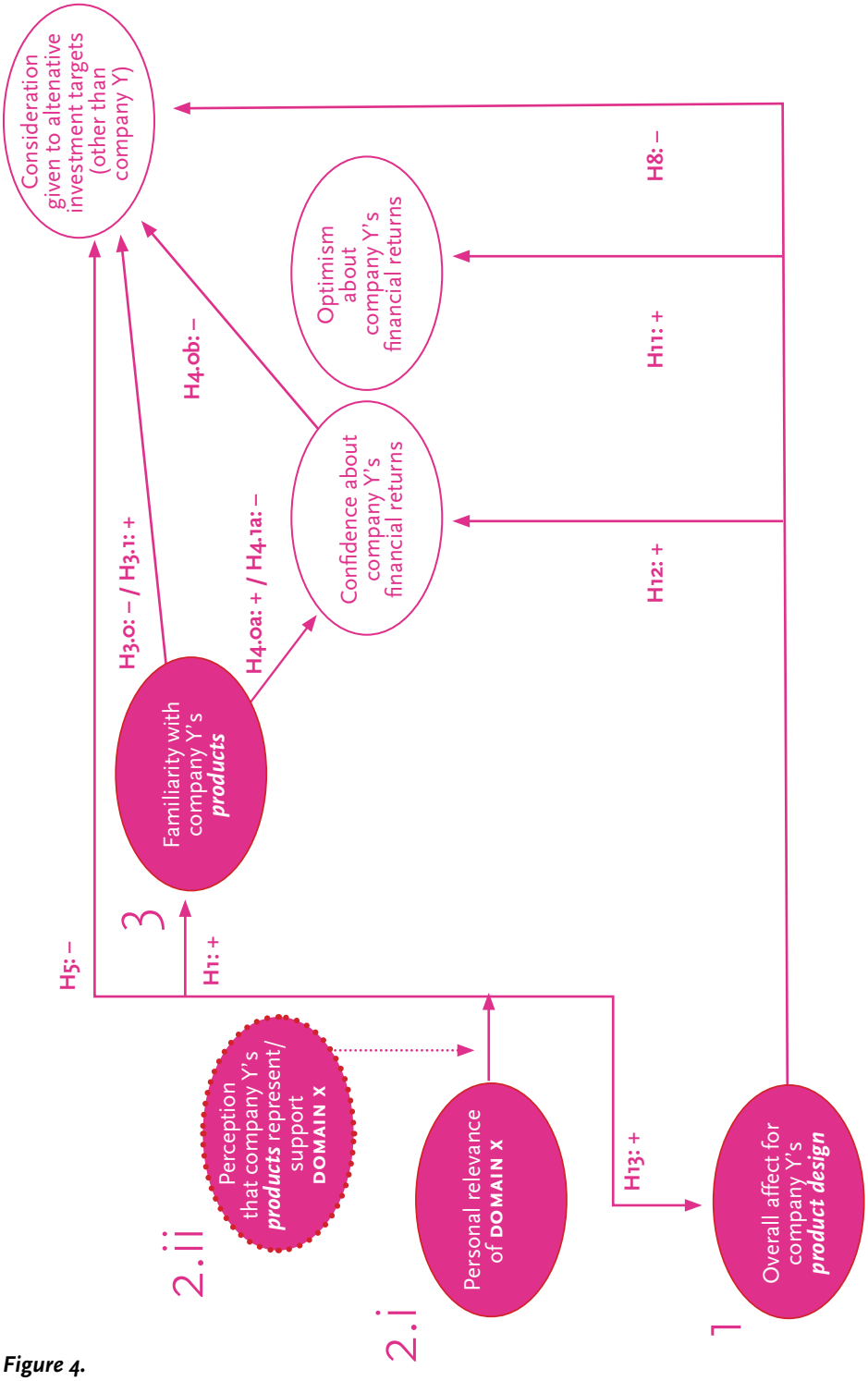


Figure 4.
Summary of hypotheses: The effects of an investor's evaluations of a company's product design on his financial expectations about the company's stock and consideration of alternatives (Model 1a).

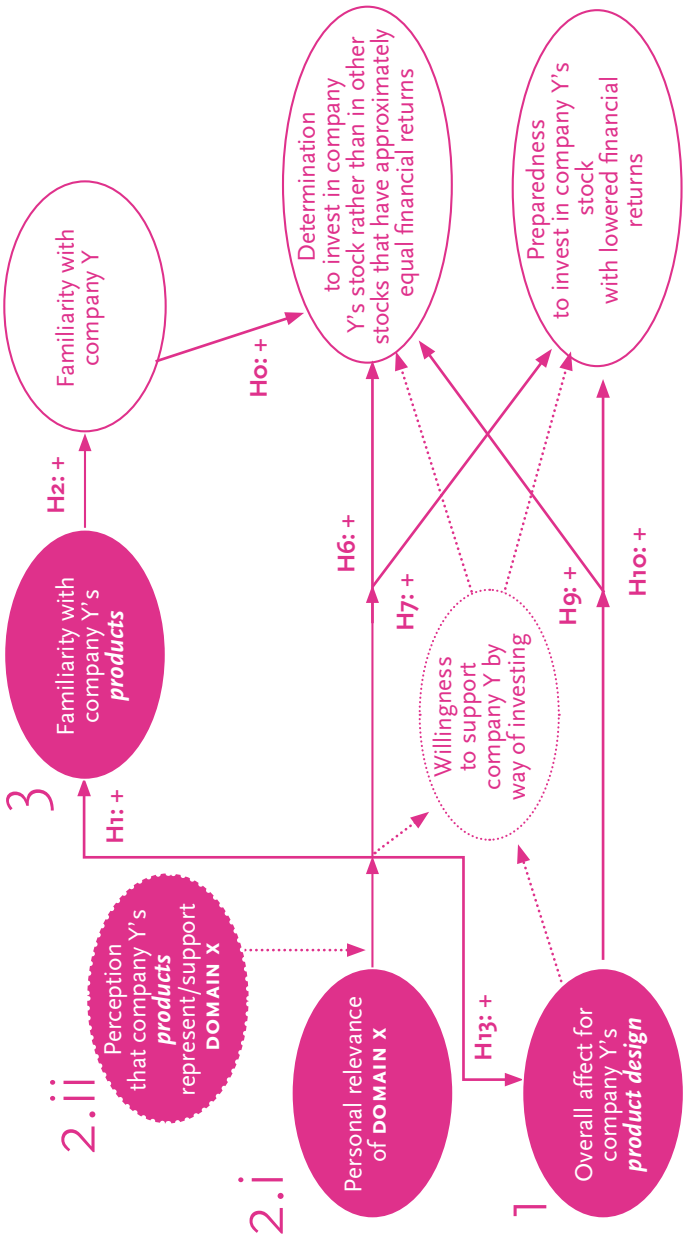


Figure 5.
Summary of hypotheses: The effects of an investor's evaluations of a company's product design on his extra investment willingness, beyond expected financial returns (Model 1b).

As a justification for the corollary, consider the fact that a company often needs and wants to present – or promote – itself to investors for them to consider the company as a potential investment target. Such promotion activities are commonly conducted as part of "investor relations" or "investor marketing" processes (e.g., Ebel & Hofer, 2003; Marcus, 2005; Vogelheim, Schoenbachler, & Gordon, 2001). (Note that in the discussion section of this dissertation, I will call for such promotion towards investors to become included in design management's tasks).

Now, consider that the hypotheses presented thus far suggest rather unanimously that an investor's (positive) evaluations of a company's products and product design have positive effect on his interest to invest in the company – be it due to financial expectations (e.g. optimism, confidence) or investment willingness beyond expected financial returns or both. Taking together these two considerations, we can expect that to the extent that a company emphasizes its product design to an investor – when presenting itself as an investment target to the investor with some kind of advertisement (ad) – the investor's general willingness or interest to invest in the company gets increased. Namely, higher product design emphasis in a company's investment advertisement is likely to make it more salient to the investor how he might use investment in the company as a vehicle of expressing his identification with and affect for the company's product design (and domains that the products support). An opposite case occurs when an investor does not come to think at all about the company's product and product design when considering the company as an investment target. In such a case, the (potentially positive) product design evaluations naturally would not have much effect on the investor's interest to invest in the company.

An analogous case is an advertisement for a consumer service, e.g. a boat cruise, which emphasizes the fun dimension of the service. Assuming that there are few people whose willingness to buy the cruise would be negatively affected by their coming to think of the fun involved in the cruise, the fun emphasis/appeal in the advertisement should, on average,

increase people's willingness to buy the cruise. In a similar vein, the product design -emphasis in a company's investment advertisement can be expected to have positive effect on general willingness to invest in the company's stock among investors.

Summarizing the above discussion, my final – corollary-like – hypothesis is:

> ***Hypothesis H14:*** Product design emphasis in a company's investment advertisement **has positive effect** on investor's general interest to invest in the company's stock.

4 Methodology of the empirical research

4.1
PHILOSOPHICAL-PARADIGMATIC CHOICES

In general, the selection of the types of empirical data and methods for the present research stemmed from five philosophical positions. First, as implied already by the nature and form of the hypotheses, the empirical research would focus on examining correlational and/or causal relationships between constructs of interest, with *quantitative data and statistical inference*. According to a commonplace notion, such an approach has the advantage of producing results that are generalizable beyond the immediate study context, and can also be easily replicated in different contexts.

Second, I specifically adopted an approach whereby I would measure individuals' attitudinal constructs with respect to particular companies' products, on one hand, and their investment behavior constructs with respect to the same companies, on the other. The analysis would, then, examine the correlations and variances between the constructs across individuals, i.e., between subjects (see e.g., Bagozzi, 1977) – and, thereby, accord to a "cognitive research program", which is common in consumer research (Anderson, 1986). Thus, the empirical studies represented an approach of between-subjects testing of hypothesized relationships among constructs (e.g.: Will individuals who have greater affect for a company's product design have higher investment interest towards the company?). At the same time, the approach would be *realist* in the philosophy of science sense, and assume that individuals' psychological states and behaviors can be (mechanistically) modeled, singled out, measured, and analyzed (see e.g., Wright & Bechtel, 2007).[20]

[20] A possible alternative for examining the between-subject correlations of attitudinal constructs and behavioral constructs would have been to ask individual investors to themselves interpret their own investment motivations. This alternative was, however, considered inferior, since it would have risked producing overly self-rationalized accounts of the investors' motivations and behavior.

Third, the focus of the study would be on how individuals' *subjective* product design perceptions and evaluations influence their investment behavior and decisions – rather than how some sort of objective (proxy for) a company's design excellence influences some sort of objective (proxy for) investor attractiveness of the company. Therefore, the most credible and valid data was considered to pertain directly to individuals' subjective company/design perceptions and evaluations, on one hand, and to their investment behaviors and decisions, on the other – rather than to aggregate or average index data over a population of investors (cf. Frieder & Subrahmanyam, 2005; Madden, Fehle, & Fournier, 2006). This meant, in effect, adopting consumer research -style data and techniques, which is actually an approach that many authors have recently advocated in the field of investor research (Clark-Murphy & Soutar, 2004, 2005; Fama & French, 2004; Statman, 2004).

Fourth, it was assumed that credible and valid data about both an individual's attitudes and his behaviors can be gathered by asking the individual himself to give *self-reports* about them (Ajzen, 2008; Anderson, 1986; Weaver & Schwartz, 2008). Although this kind of data is not free of biases (which will be attended to in section 7.3.1), the choice of data was essentially a philosophical-paradigmatic choice of presuming that self-reported data about one's attitudes and mental decision-making processes is more valid than purely behavioral-observational data, as the latter would necessarily be limited to a narrow set of overt behaviors or behavior outcomes.

Fifth, I adopted the philosophical view that methodological triangulation (see Campbell & Fiske, 1959; Denzin, 1978; Webb, 1966), especially when it comes to data, is a feasible strategy for empirical research and can enhance the validity and reliability of the findings. As explained in the next section, my eventual approach was to use two main types of data so as to complementarily examine the same research questions: retrospective and prospective. Specifically, retrospective data on *real* stock investment decisions that the investors had recently made was considered advantageous due to the very fact that the data would pertain to decisions that the investors

had actually made, in real life. Yet, retrospective data would inevitably suffer from some subjects' less than perfect memory about their past decisions (as well as potential post-rationalization of the decisions). Therefore, I decided to pursue prospective data, as well. Specifically, the investors would be presented certain scenario-like investment decision-making settings and experimental data would be gathered about their attitudes and prospective investment intentions.[21]

4.2
OVERVIEW OF THE EMPIRICAL STUDIES

In this dissertation, I examine the hypotheses with three empirical studies. Two of the studies (Study 1a and Study 1b) are based on data that was gathered from the same investors through one and the same survey (questionnaire), while the last study (Study 2) is based on data gathered from different investors at a different instance.

4.2.1
STUDIES 1A AND 1B

Studies 1a and 1b are based on the methodological approach of *causal modeling of correlational data* on latent variables. That is an approach which has in recent decades been used increasingly often – in psychological and consumer research – to *test or confirm* hypothesized effects of individuals' attitudes on their behaviors (Bagozzi, 1980; Baumgartner & Homburg, 1996; Bentler & Speckart, 1979; Bentler, 1980). The notion of "latent variables" means, in essence, that the variables or constructs of interest (such as affect or personal relevance) are not directly measured, but the researcher measures those constructs with a number of manifest variables/indicators. The causal modeling, then, explains the statistical properties of the measured variables in terms of the hypothesized latent variables and their relation-

ships (Bentler, 1980)[22]. In simple terms, the modeling yields statistical indicators concerning how well one latent variable is correlated with – and, hence, predicts – another variable. At the same time, statistics are obtained about how well the multiple manifest or measured variables actually relate or "load" on the latent variable.

A commonly-cited, basic aspect of study design in causal modeling is the fact (or requirement) that the researcher has derived, based on theory, maps of the (latent) variables of interest and their hypothesized (correlational) relationships. These relationships are then to be confirmed with the data. Notably, I have developed such maps, in essence, in section 3.2 (with graphical depictions presented in Figures 4 and 5, pp. 61–62).

Concerning further details of the study design and measurement, my application of causal modeling to correlational data – in Studies 1a and 1b – involved asking a sample of investors at the same time (in one questionnaire) about (i) their recent decisions (i.e., behavior) to invest in a particular company, on one hand, and (ii) their attitudes towards the company prior to the investment, on the other. The study design also involved some aspects that can be considered "quasi-experimental", namely certain (quasi-)manipulations detailed in sections 5.3.1 and 5.4.1, respectively for Studies 1a and 1b. However, since all the data (both attitudinal and behavioral) were collected *at the same time* (retrospectively) and there was no actual manipulation implemented (to the attitudinal constructs) *before* the outcome (behavior) was

[21] Note that a hypothetical third option – data gathering at the same moment that investors make real investment decisions – was considered too difficult to realize in practice, due to the difficulty of getting real-time access to investment decision-making situations. Moreover, people usually view their money investments to be a rather sensitive and private issue and will not want outsiders to intervene in or observe their decision-making.

[22] The word "causal" is not, in the context of causal modeling on correlational data, meant to refer to any profound philosophical meaning of "cause". Rather it refers to a hypothesized, unobserved process, so that phrases such as "process modeling" or "system modeling" would actually be viable substitute labels for "causal modeling" (Bentler, 1980, p. 420). In effect, the potential "causation" revealed by the modeling implies correlation and the fact that the one variable serves as predictor for another.

measured, the study design is best described simply as *correlational design* (rather than true quasi-experimental design) (Mark & Reichardt, 2004).

All in all, the use of retrospective self-reports about attitudes and behavior – as in Studies 1a and 1b – is rather common in causal modeling on correlational data and can be considered fairly valid in many cases (Mark & Reichardt, 2004; Pearson, Ross, & Dawes, 1992). In the present context, I consider it valid especially because it allowed asking investors about real investment decisions that they had actually made recently, instead of asking them about their investment motivations in general or presenting them with entirely hypothetical investment scenarios. However, the use of retrospective data inevitably poses its limitations – mostly due to respondents' non-perfect memory as well as tendency to give such reports about their past attitudes and behaviors that are bent towards their current attitudes/behavior and/or towards their presumptions of what is socially desirable (e.g., Levine, Safer, & Lench, 2006; Pearson, Ross, & Dawes, 1992). Therefore, I chose – in the spirit of triangulation – to complement Studies 1a and 1b with another study, Study 2, which would not rely on retrospective data.

4.2.2
STUDY 2

Besides not relying on retrospective data, Study 2 would, in fact, apply the most traditional and well-accepted methodological approach to studying individual's psychology and behavior, i.e., randomized experiment.

Study 2 was designed to address, implicitly, all the hypotheses H0-H13 – by way of explicitly testing for the corollary hypothesis H14, as explained in section 3.2.4. Focusing mainly on examining one hypothesis (H14) was motivated by the fact that randomized experiments are best suited to studies where one has one (or two) categorical explanatory (i.e., independent) variable(s) – the levels of which can be manipulated by the researcher – and one continuous dependent variable. In other words, randomized experiment is not very well suited to examining complex causal maps in their entirety –

with multiple, continuous predictor, mediator, and dependent variables (like those in Models 1a and 1b).

Therefore, the approach in Study 2 was simply to assign a sample of investors randomly to different groups; present a particular company to the groups with investment advertisements that differed in terms of their product design emphasis; ask the investors about their interest to invest in the company; and analyze whether the investment interest, on average, differed between the groups.

5
Studies
1a
and
1b

5.1
SAMPLE AND DATA GATHERING

As the wider population of interest in Studies 1a and 1b, I had such people who might invest some of their savings or net worth in stocks of publicly traded companies. I approached three hundred individuals per three consumer product companies from different industries, listed in Helsinki Stock Exchange, Finland. The approached individuals were (randomly) sampled from a list of such stockowners of the companies who had become stockowners during the past 1.5 years – presumably recently enough to be able to remember the investment decision and its context. The lists were provided by the companies. The three companies had well-known product brands at the national level, so that valid product design evaluation data could be obtained. Notably, the inclusion of three companies to the study was considered reasonable in the sense that it would likely enable some detection of whether the (hypothesized) causal effects were dependent on company or industry – through inclusion of company dummy/interaction variables into the models to be analyzed. Yet, limiting the number of companies to three would ensure that the number of company dummy/interaction variables would not grow excessively large (as it might if the number of companies was much higher).

I sent a survey questionnaire to the investors in question by mail in summer of 2007[23], with a prepaid reply envelope. The cover letter is presented in Appendix A. 340 usable questionnaires were returned from the total of 900 contacted investors, yielding a response rate of 37.8 %. The eventual sample size was adequate for the main data analysis method used, partial least squares (PLS) path modeling (see Chin & Newsted, 1999).

Due to the non-perfect response rate, there was a potential non-response bias and, especially, the possibility that those investors who responded to the survey (appr. 38% of the contacted investors) might have different tendencies with respect to the hypotheses than the non-respondents. This (self-)selection bias might lead to the effects of product domain relevance and/or affect for

product design appearing to be greater (or weaker) in my results than what those effects would be in a wider population of investors. While it is difficult to definitely overrule this possibility, I used a common procedure to control for the bias in question: distinguishing the respondents who answered late (i.e., closer to the deadline) from the early respondents and analyzing the differences between these two groups. In this procedure, the assumption is that late respondents liken to non-respondents, and based on analysis of how they differ from early respondents, one can conclude whether serious non-response/selection bias exists (see e.g., Armstrong & Overton, 1977).

In any case, the early vs. late respondent check showed no significant differences between earlier and later respondents. This indicates that non-response/self-selection bias should not be a serious concern.

A description of the investors in the final sample of Studies 1a and 1b – individuals who had invested in the three companies A, B, and C respectively – is provided in Table 1, in terms of a set of personal background variables. The background variables include gender, age, education, monthly income, total number of stocks owned, and stock following activity.

[23] Note that as a tactic to increase response rate, the cover letter of the questionnaire told the recipient that she had a chance to win a prize if she returned the questionnaire. Specifically, it was mentioned that there would be a lottery involving three prizes, drawn among all the respondents that returned the questionnaire. The chances of winning were apparent to the participant (less than 1:100), since the cover letter also mentioned the approximate number of study participants. The prizes were: a tire set, a ski set, and a knife set – all with the value of a few hundred euros. The participant could note that the prizes would be donated by companies participating in the study. However, as all the participants were informed of the possibility to win whichever of these heterogeneous prizes, it is unlikely that the lottery setting seriously interfered with the study design. Interference could have been a greater problem if each respondent had been informed of only one kind of lottery prize available to him – in that case those interested in the product category represented by the particular prize might have been more likely to self-select themselves to the sample.

Table 1.
Description of the sample of Studies 1a and 1b: Personal characteristics of the investor-respondents

	Overall sample	*Company A's investors*	*Company B's investors*	*Company C's investors*	*Chi square*	*P value*
Gender					2.951	.229
female	23.7%	22.5%	28.4%	18.3%		
male	76.3%	77.5%	71.7%	81.7%		
Age					13.022	.111
below 15	0.6%	0.8%	0.8%	0.0%		
15–25	2.4%	2.3%	1.6%	3.7%		
26–40	22.3%	14.7%	27.6%	25.9%		
41–60	44.5%	45.7%	39.4%	50.6%		
over 60	30.3%	36.4%	30.7%	19.8%		
Education (highest)					12.686	.123
middle school	9.5%	8.7%	11.8%	7.3%		
high school	5.7%	3.9%	7.9%	4.9%		
vocational school	11.6%	15.8%	9.5%	8.5%		
college/bachelor	22.9%	28.4%	21.3%	17.1%		
university/master	50.3%	43.3%	49.6%	62.2%		
Monthly income					14.865	.021
below 2000€	15.0%	14.2%	19.8%	8.8%		
2000–3999€	47.2%	54.3%	44.4%	40.0%		
4000–5999€	21.3%	19.7%	21.4%	23.8%		
over 6000€	16.5%	11.8%	14.3%	27.5%		
Total no. of stocks owned					8.993	.174
1-2 stocks	2.1%	3.9%	0.8%	1.2%		
3-5 stocks	21.3%	23.9%	18.9%	21.0%		
6-10 stocks	37.0%	40.8%	37.0%	30.9%		
over 10 stocks	39.6%	31.5%	43.3%	46.9%		
Stock following activity					1.990	.921
daily	36.0%	34.1%	37.5%	36.6%		
weekly	44.8%	48.1%	44.5%	40.2%		
monthly	14.8%	14.0%	13.3%	18.3%		
yearly or less	4.4%	3.9%	4.7%	4.9%		

Unfortunately, I am unaware of any studies that would map the current characteristics of average Finnish stock investors[24], which means that I am unable at this time to compare the characteristics of the sample to the general stock investor population. However, the distribution of investor characteristics in the sample seems to accord to an intuitive notion of individual investors: the distribution is skewed towards middle-aged (rather than very young or old), college/university educated, and medium/high-income people. Most of the investors also have moderately diversified stock portfolios (with 6 or more stocks) and tend to follow their stocks at least weekly.

I also analyze, in Table 1, whether there were differences in the background variables between investors who had invested in the different companies included in the study. In most variables, no statistically significant differences are detected. This warrants a conclusion that the investors of the three companies included in the study did not differ significantly by the company but likely represent a rather general profile of (Finnish) individual investors. An exception was in the variable of monthly income, where some differences can be detected: specifically, company C's investors seemed to have somewhat higher average income.

5.2
OVERALL STUDY DESIGN – STUDIES 1A AND 1B

As explained above in section 4.2.1, the basic methodological-philosophical choice for Studies 1a and 1b was to gather and analyze retrospective data on real investment decisions that individual investors had recently made.

[24] The Finnish Foundation for Share Promotion (http://www.porssisaatio.fi/en/) has conducted some surveys on individual stock investors, but their data is mostly on household level rather than individual level. The dataset used in the studies of Grinblatt & Keloharju (2009), in turn, is so old (from 1995-1997) compared to the present dataset (2007) that it makes little sense to compare the sets.

Another methodological choice was whether the investment decision would be framed as a choice between buying two (or more) stocks or whether it would be framed as an opportunity to invest in one stock, addressed alone (see Clark-Murphy & Soutar, 2004; Jones, Frisch, Yurak, & Kim, 1998). In other words, would a subject be questioned about his investment decision as if it had been a choice between two (or more) stocks or as if the stock in which the individual had invested had been a stand-alone investment opportunity?

I chose to apply both the approaches: the latter approach in examining the effects of investors' product design perceptions on their financial expectations and consideration about companies' stocks (Model 1a, Figure 4, p. 61) and the former approach in examining the effects of investors' product design perceptions on their investment decisions *beyond* financial returns expected from companies' stocks (Model 1b, Figure 5, p. 62). In other words, questions pertaining to the dependent variables of Model 1a (Figure 4) – investor's optimism and confidence about the financial returns from the company's stock as well as consideration he gave to alternative investment opportunities – were framed as if the company's stock had been a stand-alone investment opportunity. In contrast, questions pertaining to dependent variables in Model 1b (Figure 5) – investor's determination to invest in company A's stock when it has equal expected financial returns as another stock B and investor's preparedness to invest in company A's stock with lowered financial returns – were framed as if the investment in the company's stock had been a choice between two stocks.

The specifics of the study designs for Studies 1a and 1b are detailed below, including the variable measures, i.e., the specific questions presented to the investors. When it comes to data analysis, the specific causal modeling technique that I used was partial least squares (PLS) path modeling (Fornell & Cha, 1994). The two-fold study design led to examination of two structural path models, corresponding to Figures 4 and 5, respectively. Specifically, I employed SmartPLS (Ringle, Wende, & Will, 2005), which allows for the simultaneous testing of hypotheses while enabling single- and multi-item measurement, as well as the use of both reflective and formative scales

(Fornell & Bookstein, 1982). This shows in the fact that some of the constructs were measured with single-item/question scales, while some were measured with multiple items/questions.

5.3
STUDY 1A

5.3.1
METHOD – MODEL 1A

Model 1a focused on examining the effects of investors' product design -related evaluations on their *financial expectations* about companies' stocks as well as on their considerations of alternative stocks. The structural PLS model specified as Model 1a is depicted, to its essential parts, in Figure 4 (p. 61). The study setting for this model involved asking the investors about the focal companies in which they had invested ("investee companies") – *without* framing the questions in a way that would have assumed that the investment had been a choice between two stocks.

Specifically, the purpose of Model 1a was to test the hypotheses concerning the following *dependent variables*:

a) OPTIMISM ABOUT THE COMPANY'S FINANCIAL RETURNS
b) CONFIDENCE ABOUT THE COMPANY'S FINANCIAL RETURNS
c) CONSIDERATION OF ALTERNATIVE STOCKS

The data for this model consisted of each respondent's

1. perceptions and attitudes (familiarity, personal relevance, overall affect) related to the product design of the focal (investee) company, prior to his decision to invest in that company (as retrospectively reported by the respondent); and
2. financial expectations/behavior with respect to that company (a-c above), which had led to the investment in question (as retrospectively reported by the respondent).

Correspondingly, the analysis involved examination, with PLS path modeling, of the correlation relationships between (1) the perceptual/attitudinal variables and (2) the investment behavior variables – over the whole sample of investors.

While the dependent variables were listed above (a-c), the model's main *predictor variables* were:

- OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN (balloon 1 in Figure 4, p. 61)
- PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN (balloons 2.i and 2.ii in Figure 4)

Note that I explain in the next section below, how and why the constructs 'personal relevance of life domain X' and 'perception that company A's products represent/support life domain X' – as depicted in Figure 4 (balloons 2.i and 2.ii, respectively) – were collapsed into one measurement variable, i.e. PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN.

Besides the dependent and predictor variables listed above, Model 1a contained – as an intervening mediating variable – one's FAMILIARITY WITH THE COMPANY'S PRODUCTS (balloon 3 in Figure 4).

Finally, in addition to the paths shown in Figure 4, I included into the model direct paths from FAMILIARITY WITH THE COMPANY'S PRODUCTS towards OPTIMISM ABOUT THE COMPANY'S FINANCIAL RETURNS and from PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN towards OPTIMISM ABOUT THE COMPANY'S FINANCIAL RETURNS and CONFIDENCE ABOUT THE COMPANY'S FINANCIAL RETURNS. I included these paths, despite their non-presence in the theoretical hypotheses, so that I would be able control for the occurrence of the corresponding effects – since the occurrence of the effects in the data would indicate that my theoretical model/propositions were incomplete. Also, I included into the model indicators of the investee companies as dummy control variables, in order to control the potential investee-company-specificity (as well as domain-specificity) of the effects in the model. Furthermore, I included interaction terms of the predictor variables and the company dummy variables.

SPECIFICS OF THE STUDY DESIGN CONCERNING PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN. Regarding the explanatory variable PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN, it must be noted that a company's products may be perceived to represent or support a variety of (life) domains (domains X, Y, Z, etc.). For instance, tires (of a tire company) might be perceived to represent 'car-driving', 'roads', 'road safety', 'traffic', or even just 'being mobile'. Since it would be impossible to examine all the domains that different investors (respondents) potentially perceive the company's products to represent or support, my approach was to select one such domain – per each of the focal/investee companies – which most investors would likely consider the company to represent or support with its products (to a high degree). In Richins's words (1994a) such a perception is a "public/shared meaning" related to the products of a company.

Now, if the domains were successfully selected (or quasi-manipulated) to be ones that all (or most) the investors would – due to a shared, public meaning – (ii) perceive the companies' products to represent, the subsequent analysis could concentrate exclusively on analyzing the effects of the (i) degree of personal relevance of those domains on the dependent variables. (For the distinction of these two aspects ii vs. i, see p. 44).

In Richins's terms (1994a), the (i) degree of personal relevance would in this setting be a "private meaning", varying over the individual investors. In other words, even if all the investors (ii) perceived a company's products to represent a certain domain, the investors would differ in regards to (i) how relevant that domain was to them personally. In sum, this meant, on one hand, that the (i) degree of personal relevance would be the specific variable whose values I would enter into my PLS analysis over the sample of investors – yet, only after pre-testing that the selected domains would indeed be such that all the investors would (ii) perceive the companies' products to represent (to a high degree). On the other hand, the exact degree to which a company's products would be perceived to represent a certain random domain by individual respondents would not enter the analysis as a variable[25] – since I would presume (and pre-test) this degree to be constant and high (reflecting the public meaning).

But how to find and select such domains that all (or most) investors would likely perceive a certain focal company's products to represent?

For the purposes of the present study, I opted for selecting such domains through a most self-evident, user-oriented way: by paying attention to the use purpose or domain of the products. Indeed, a most common (public) meaning related to a product is its use area, the activity domain in which it provides functional value to users (see e.g., Battarbee & Mattelmäki, 2002). I selected the domains for study accordingly. For instance, a company designing and producing tires was assumed to represent the (activity) domain of 'motoring/car-driving' with its products. Table 2 lists the selected domains for each of the three focal companies whose investors were included in the sample.

To recap, it was assumed that the selected domains, listed in Table 2, would be such domains that investors in general would (publically) perceive the focal/investee companies' products to represent or support. To test this assumption, the survey instrument included pretest questions; Table 3 presents the findings of these tests. Based on the mean values, it can be seen that for all the company–domain combinations, the respondents overall agreed (mean>0.0) with statements claiming that the focal company's products represented the domain. All the means differ significantly from the neutral value of 0.0 at $p<.001$ level.

MEASURES – PREDICTOR VARIABLES. When it comes to the predictor variables of Model 1a, the scale items are presented in Table 4.

The latent predictor variable PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN was measured with a two-item reflective scale. According to the theoretical discussion of section 3.2.1, the questions were developed to

[25] Note that I illustrate, in Figure 4 (p.61), the fact that my analysis omits the individual-level modeling of the degree to which a company's products are perceived to represent a selected domain by linking the corresponding moderating construct with a dashed (instead of solid) arrow to the path model.

Table 2.

The selected (quasi-manipulated) domain per focal/investee company, in Study 1a

Focal (investee) company	***Focal company's products***	***Domain*** – Which domain the products are supposed to represent?
A	tires	motoring/ car-driving
B	garden and other domestic free-time tools	gardening/ visiting summer house
C	sports equipment and apparel	sport

Table 3.

Tests for the assumption that the selected domains were domains that the investors perceived the focal/investee companies to represent (Study 1a/b)

Domain	***Item***	***Focal company: Mean[a]***
motoring/ car-driving	"The products of [company A's product brand] supported/ represented motoring very well."	A: 1.93***
	"[Company A] was committed to developing products that support/represent motoring."	A: 1.57***
gardening/ visiting summer house	"The products of [company B's product brand] supported/ represented gardening (/visiting summer house) very well."	B: 1.53***
	"[Company B] was committed to developing products that support/represent gardening (/visiting summer house)."	B: 1.60***
sport	"The products of [company C's product brand] supported/ represented a certain sport very well."	C: 1.55***
	"[Company C] was committed to developing products that support/represent a certain sport ."	C: 1.63***

[a] The values in the table are mean values of respondents' responses to questions that requested them to indicate the extent to which they agreed (vs. disagreed) with the statement on a 7-point Likert scale (-3=totally disagree... +3=totally agree).
**** planned comparison of mean to value 0 (neutral value of 7-point disagree-agree scale) significant at p<.001 level*

ask about the personal importance that the investor attached to the domain represented by the products of the company in which he had invested, i.e., his identification with the company's product domain. As explained in the previous section, the domain whose personal relevance a respondent was asked to report had been selected to be such a domain which investors in general would perceive the company's products to represent or support.

For the first item of the two-item scale, the respondent was asked: "How relevant a thing was [domain X] to you personally?" (For instance, investors who had invested in the tire company were asked, "How important a thing was motoring/car-driving to you personally?"). This question stemmed from the general fact that personal relevance of the company's product domain should mean that one perceives the domain to be personally important to oneself (Bloch & Richins, 1983). The responses were recorded on a 7-point scale: 0="made no difference"... 6="very important."

For the second item, the respondent was asked: "How well did [domain X] reflect you as a person?". This question reflected the notion that the personal relevance meant in the hypotheses was, specifically, relevance or importance to one's self/identity (rather than certain other kind of personal relevance). The specific question used adapted the question by Bergami and Bagozzi (2000). The responses were recorded on a 7-point scale: 0="not at all"... 6="very well".

The reliability of this two-item reflective scale for PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN was satisfactory, as the scale achieved a Cronbach's alpha of .74, average variance extracted (AVE) of .80, and composite reliability of .89.[26]

The other latent predictor variable, OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN, was measured with a multiple-item reflective scale, specifically with six items. As is conventional in psychological studies that

[26] According to conventional view, criteria for adequate/satisfactory reliability are .7 for Cronbach's alpha, .5 for AVE, and .8 for composite reliability (see e.g., Netemeyer, Bearden, & Sharma, 2003).

Table 4.
Items for predictor variables in Study 1a (/b)

Construct	*Measurement type*	*Measurement*	*Scale reliability (for multi-item scales)*
PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN	Reflective, 2-item scale (each item with 7-point scale)	1. "How relevant a thing was [domain A] to you personally?" 0="made no difference"...6="very important" 2. "How well did [domain A] reflect you as a person?" 0="not at all"... 6="very well"	Cronbach's alpha: .74 AVE: .80 Composite reliability: .89
OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN	Reflective, 6-item scale (each item with 7-point scale)	1-3 "What were [company X]'s products like in your opinion?" -3="very unpleasant"... +3="very pleasant" -3="very unattractive"...+3="very attractive" -3="very bad"... +3="very good" 4. "What was your attitude towards [company X]'s products like?" -3="highly negative"... +3="highly positive" 5. "Did you like [company X]'s products?" -3="didn't like at all"... +3="liked very much" 6. "The products of [company X's product brand name] were of clearly better design than those of competitors'" [a] 0="strongly disagree"... 6="strongly agree"	Cronbach's alpha: .90 AVE: .66 Composite reliability: .92
FAMILIARITY WITH THE COMPANY'S PRODUCTS	Reflective, single-item scale (with 7-point scale)	1. "How well did you know the products of [company X's product brand name]? 0="not at all"... 6="very well"	
FAMILIARITY WITH THE COMPANY	Reflective, single-item scale (with 7-point scale)	1. "How well did you know the [company X]? 0="not at all"... 6="very well"	

a This item was based on the assumption that the affective evaluation of a company's products will be exhibited largely relative to competition.

deal with individual's overall affective evaluations of (i.e., attitudes towards) objects (Ajzen, 1991, 2005; for investment context, see MacGregor et al., 2000), the variable was measured, first of all, with bipolar, semantic differential scales. Such scales consist of a set of bipolar evaluative/affective adjective pairs such as *pleasant-unpleasant, attractive-unattractive, good-bad*. Each adjective pair is placed on opposite ends of a 7-point scale (-3...+3), and respondents are requested to mark each scale as it reflects their evaluation of the object. In the present study, the target object was the overall product design of the company in which the respondent had invested – so, the questions probed the investor's overall evaluation of the company's products in terms of pleasantness, attractiveness, and goodness. Notably, feelings of pleasantness, attractiveness, and goodness are commonly viewed to be among main evaluative dimensions for products in contemporary design research (e.g., Jordan, 2002; Norman, 2004).

In addition to the semantic differentials, I also included *direct* questions probing the respondent's overall evaluation of the company's products:

- "What was your attitude towards [company X]'s products like?" (anchored by -3="highly negative" and +3="highly positive"), and
- "Did you like [company X]'s products?" (anchored by -3= "didn't like at all" and +3= "liked very much").

Finally, the respondent-investor was asked to state his agreement with the statement "The products of [company X's product brand name] were of clearly better design than those of competitors". The responses were recorded on a 7-point Likert scale anchored by 0="strongly disagree" and 6="strongly agree". This item was based on the assumption that the affective evaluation of a company's product design will be conceived largely relative to competition.

The eventual measure for OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN consisted of all the aforementioned six reflective items (three semantic differentials; two direct questions; one agree-disagree question).

The reliability of this multiple-item scale was good, as it achieved an alpha score as high as .9, AVE of .66, and composite reliability of .9.

The final predictor variable in Model 1a, FAMILIARITY WITH THE COMPANY'S PRODUCTS, was measured with a single-item scale. The respondent was asked: "How well did you know the products of [company X's product brand name]?" The responses were recorded on a 7-point scale, anchored by 0="not at all" and 6="very well".

MEASURES – DEPENDENT VARIABLES. The scales for the dependent measures of Model 1a were new and developed for this study, due to lack of earlier research in the area. The consideration that the investor practiced towards alternative investment opportunities when investing in the focal company's stock (CONSIDERATION OF ALTERNATIVE STOCKS) was measured with two reflective items. First, the subjects were asked: "When you were about to buy [focal company]'s stock, how much did you consider buying other companies' stocks?" The responses were recorded on a bipolar 7-point, reverse-coded scale anchored by:

- 0="[Focal company]'s stock was merely one alternative among the innumerable stocks that I considered."
  ...
- 6="I did not consider other companies' stocks at all."

Second, the subjects were asked: "When you were about to buy [focal company]'s stock, had you decided to invest in whatever company comes along or did you specifically want to buy [focal company]'s stock?" Here, the responses were recorded on a bipolar reverse 7-point scale anchored by:

- 0="I would have in any case invested in one stock or another."
  ...
- 6="I had specifically decided to invest in [focal company]'s stock."

Note that the reverse-coding of the scales meant that greater response values on the items meant smaller value for CONSIDERATION OF ALTERNATIVE

STOCKS. The reliability of this two-item reflective scale was satisfactory, as the scale achieved an alpha score of .80, average variance extracted (AVE) of .83, and composite reliability of .91.

The potential optimism that an investor had in his expectations about the focal company's stock (OPTIMISM ABOUT THE COMPANY'S FINANCIAL RETURNS) was, in turn, measured by asking the subjects: "To what extent did you have the following beliefs contributing to your decision to buy [focal company]'s stock?". There were originally four statements to which the respondents were specifically asked to respond and on which responses were recorded on a 7-point scale:

- "I believed that the development of [focal company]'s earnings would be good in the long run."
- "I believed that the development of [focal company]'s earnings would be good in the near term."
- "I believed that the stock price of the [focal company]'s would rise in the long run."
- "I believed that the stock price of the [focal company]'s would rise in the near term."[27]

All the scales were anchored by 0="did not contribute at all to my investment decision" and 6="essentially contributed to my investment decision". However, whereas responses on the first three items showed fairly high correlation with each other and satisfactory outer loadings with the latent variable (>.50), the last item did not, having outer loading of .39[28]. Therefore, the fourth item was dropped from the final reflective scale of OPTIMISM ABOUT THE COMPANY'S FINANCIAL RETURNS. The reliability of the remain-

27] The last item was dropped from the final scale due to low factor loading.

[28] This may be due to the possibility that respondents interpreted the item to inquire about their relative desire for near term stock returns vs. long term stock returns and earnings.

ing three-item reflective scale was satisfactory, with an adequate alpha score of .68, AVE of .61, and composite reliability of .82.

Finally, the confidence that an investor potentially had in his own expectations about the financial returns of the company's stock (CONFIDENCE ABOUT THE COMPANY'S FINANCIAL RETURNS), was measured by asking the respondents how "surprising" the financial returns of the stock had appeared to them during the time period following the investment. The logic for this measure was that a greater feeling of surprise – as felt after the investment – about the financial returns from the stock would reflect greater/excessive confidence in one's pre-purchase expectations about the returns (see Glaser, Langer, & Weber, 2007). The specific questions were:

1. "Has the stock price development of [focal company] after your investment appeared surprising to you?"
2. "Has the earnings development of [focal company] after your investment appeared surprising to you?"

The responses were recorded on a bipolar 7-point reverse scale anchored by "0=not at all surprising" and "6=highly surprising". The reliability of the scale was satisfactory, with an adequate alpha score of .83, AVE of .86, and composite reliability of .92.

DISCRIMININANT VALIDITY AND MULTICOLLINEARITY. The feasibility of analyzing a model like Model 1a (or 1b) rests on the assumption that the predictor (as well as dependent) variables reflect distinct concepts, i.e., exhibit discriminant validity. For instance, the measurement items for PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN should not measure "the same thing" as the measurement items for OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN – since the model is based on the assumption that these are theoretically distinct constructs.

Commonly, discriminant validity is examined by looking into correlations between the variables (Campbell & Fiske, 1959). Table 5 presents correlations between the main variables of Model 1a. In simple terms, the

correlations between the variables should not be too high (too close to one). Specifically, one can calculate the extent to which the two scales overlap by using the following formula:

$$\frac{r_{xy}}{\sqrt{r_{xx} \cdot r_{yy}}}$$

,where r_{xy} is correlation between variables x and y, r_{xx} is the reliability of x, and r_{yy} is the reliability of y. A result less than .85 tells us that discriminant validity likely exists between the two scales.

Looking into the correlations between the predictor variables – PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN, OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN, and FAMILIARITY WITH THE COMPANY'S PRODUCTS – the results of the formula remain below .6 for all the combinations. Also the correlations between the dependent constructs remain low enough, even below .3. Thus, the discriminant validity was adequate.

The discriminant validity of the predictor variables, especially, is also related to the concern about multicollinearity. The correlations between the predictor variables should not be too high, since too high between-variable correlations can make the PLS path modeling unstable and the results unreliable. However, since in the present case, the simple correlations of the predictor variables remain close to or below .5, multicollinearity should not be a serious concern.

Table 5.

Correlations between the main variables of Model 1a

	PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN	OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN	FAMILIARITY WITH THE COMPANY'S PRODUCTS	OPTIMISM ABOUT THE COMPANY'S FINANCIAL RETURNS	CONFIDENCE ABOUT THE COMPANY'S FINANCIAL RETURNS	CONSIDER-ATION OF ALTERNA-TIVES
PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN	0.74					
OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN	0.29	0.90				
FAMILIARITY WITH THE COMPANY'S PRODUCTS	0.31	0.56	N/A			
OPTIMISM ABOUT THE COMPANY'S FINANCIAL RETURNS	0.05	0.12	0.09	0.68		
CONFIDENCE ABOUT THE COMPANY'S FINANCIAL RETURNS	0.05	-0.07	-0.04	0.16	0.83	
CONSIDERATION OF ALTERNATIVES	-0.14	-0.18	-0.13	-0.14	-0.24	0.80

Notes: Numbers on the diagonal are Cronbach's alpha scores. N.A. = no alpha score calculated because the construct is measured by single item.

5.3.2
RESULTS – MODEL 1A

As results for Model 1a, I list the path coefficients and t-values of the calculated Model 1a in Table B1 of Appendix B. Figure 6 presents these results in a simplified form, with significant paths/effects noted. In the calculated model, the predictor variables explain 20.5 % of CONSIDERATION OF ALTERNATIVE STOCKS, 10.3 % of OPTIMISM ABOUT THE COMPANY'S FINANCIAL RETURNS, and 10.7 % of CONFIDENCE ABOUT THE COMPANY'S FINANCIAL RETURNS, respectively. Of the predictor-mediator variables – OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN and FAMILIARITY WITH THE COMPANY'S PRODUCTS – 33.0 % and 9.0 % are explained, respectively.

The hypotheses tested in Model 1a were hypotheses H1, H3–H5, H8, and H11–H13.

First of all, with regard to the variable PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN, there is a significant positive effect by this variable on FAMILIARITY WITH THE COMPANY'S PRODUCTS (coeff.=+.31, p<.001). This finding suggests – as proposed in hypothesis H1 from the information-acquisition perspective – that the higher personal relevance an investor attaches to a life domain, the more familiar he tends to be with (such a company's) products that represent or support the domain in question.

The further paths from FAMILIARITY WITH THE COMPANY'S PRODUCTS towards CONSIDERATION OF ALTERNATIVE STOCKS must be regarded with special attention, since I presented alternative hypotheses concerning these paths. The finding is that FAMILIARITY WITH A COMPANY'S PRODUCTS has in fact a positive direct effect on CONSIDERATION OF ALTERNATIVE STOCKS, which is significant (coeff.=+.17, p<.05). This suggests, in support of hypothesis H3.1 derived from consumer/user theory, that investors' familiarity with a particular company's products actually increases the consideration they give to alternative investment targets prior to investing in that company's stock. At the same time, the finding is in stark contrast with the null hypothesis H3.0 that was derived from the mainstream of behavioral finance theory and expected that investors' familiarity with a particular company's

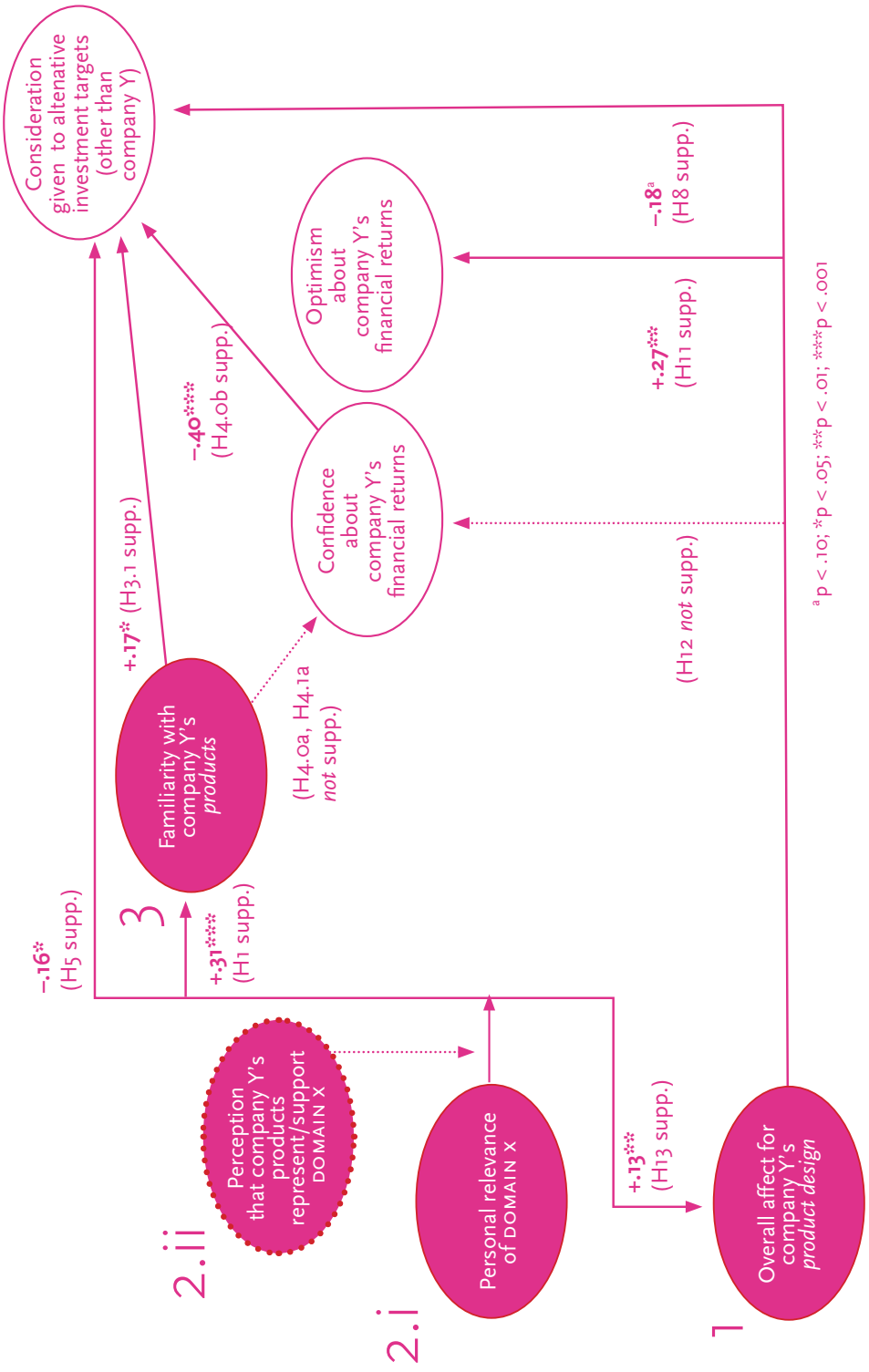


Figure 6.
Results, Model 1a: The effects of investors' evaluations of a company's product design on their financial expectations about the company's stock (and consideration of alternative investment targets)

products would decrease the consideration they gave to alternative investment targets.

Moreover, FAMILIARITY WITH THE COMPANY'S PRODUCTS is found to have *no* significant effect on CONFIDENCE ABOUT THE COMPANY'S FINANCIAL RETURNS. This finding, while calling for rejection of the null hypothesis H4.0a, is in line with the found support for hypothesis H3.1 and non-support for H3.0. Especially, the finding does *not* support the idea that an individual's familiarity with a company's products would tend to cause him to be (over)confident about his expectations about the financial returns from the company's stock – an idea sometimes implied in the mainstream of behavioral finance (cf. Barber & Odean, 2000, 2001). All in all, while an investor's confidence in his own financial expectations about a company's stock is found to have – as expected in hypothesis H4.0b – a significant negative effect on the consideration that he gives to alternative investment opportunities (CONFIDENCE ABOUT THE COMPANY'S FINANCIAL RETURNS →CONSIDERATION OF ALTERNATIVE STOCKS, coeff.= –.40, p<.001), that (over) confidence does not seem to stem from investor's familiarity with the company's products.

Nevertheless, in regards to the self-expression perspective, PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN is found to have a negative direct effect on CONSIDERATION OF ALTERNATIVE STOCKS, which is significant (coeff.=–.16, p<.05). That is, the higher personal relevance an investor attaches to a life domain that a particular company's products represent, the less consideration he tends to give to alternative investment targets while leaning towards investing in that company's stock. This supports hypothesis H5, derived from the theory that the personal relevance will generate tendency in investors to express their selves or identities through shortcutting the final investment choice in favor of the company whose product domains they find personally relevant (and ending the consideration of alternatives).

With regard to the overall evaluations of companies' product designs, OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN is found to have a direct negative effect on CONSIDERATION OF ALTERNATIVE STOCKS (coeff.=–.18,

$p<.10$), as well. Being marginally significant, this effect hints, as proposed in hypothesis H8, that the more positive an investor's overall affect for a company's product design, the less consideration he tends to give to alternative investment targets while investing in that company's stock. The theory behind is that an investor may use his affect for the company's product design as a short-cut (affect heuristic), so as to arrive at an investment decision without all the consideration given to alternatives.

Moreover, there is positive direct effect by OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN ON OPTIMISM ABOUT THE COMPANY'S FINANCIAL RETURNS, which is highly significant (coeff.=+.27, $p<.01$). That is, the more positive an investor's overall affect for a particular company's product design, the greater optimism the investor has in his expectations about the financial returns from the company's stock. This supports hypothesis H11. However, note that while this optimism is likely to positively influence one's preference and choice to invest in that company's stock, the results do not indicate that it would decrease the consideration that one gives to alternative stocks as investment targets. Namely, the path OPTIMISM ABOUT THE COMPANY'S FINANCIAL RETURNS towards CONSIDERATION OF ALTERNATIVE STOCKS is non-significant.

On the other hand, no significant path from OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN towards CONFIDENCE ABOUT THE COMPANY'S FINANCIAL RETURNS is found, either. Thus, hypothesis H12, concerned with the issue whether there is direct relationship between product design affect and (naïve) confidence in one's own financial return expectations (or tendency to underestimate risk; cf. Slovic et al., 2007; Statman, Fisher, & Anginer, 2008) does not receive support.

With regard to the interdependencies or feedback effects between design-related predictor variables in Model 1a, there is a positive direct effect by PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN ON OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN, which is highly significant (coeff.=+.13, $p<.01$). This suggests, as proposed in hypothesis H13, that the higher personal relevance an investor attaches to a life domain that a

particular company's products represent, the more positive is his overall affect for the company's product design.

Finally, regarding the control paths included in the analysis but not hypothesized in the theory development, there are no significant paths from FAMILIARITY WITH COMPANY'S PRODUCTS towards OPTIMISM ABOUT THE COMPANY'S FINANCIAL RETURNS, nor from PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN towards OPTIMISM ABOUT THE COMPANY'S FINANCIAL RETURNS or CONFIDENCE ABOUT THE COMPANY'S FINANCIAL RETURNS. This gives us confidence in the fact that my theory development has not missed important effects among the constructs. Incidentally, the effect of FAMILIARITY WITH COMPANY'S PRODUCTS ON OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN is, in contrast, positive and highly significant. This may reflect the well-known fact that mere familiarity for an object may cause some affect towards it (e.g., Zajonc, 1980).

With regard to the dummy company variables, in contrast, many of these variables have direct and/or moderating effects on the dependent variables and the relationships between PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN, and OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN, and FAMILIARITY WITH THE COMPANY'S PRODUCTS, and the dependent variables. This finding suggests that there are likely to be certain company- and/or industry-specific factors unidentified in my model that additionally explain some of individuals' financial expectations and considerations, and/or strengthen or weaken the impact of the explanatory, product design -related constructs thereon. For example, the focal (investee) company being "B" is found to have significant, negative moderating effect on the relationship between FAMILIARITY WITH THE COMPANY'S PRODUCTS and CONSIDERATION OF ALTERNATIVE STOCKS. This finding may result from the fact that an increase in familiarity with that company's products had even more substantial negative effect on an investor's consideration of alternative stocks when it came to that company's stock. The finding might also result from a situation that the respondents' overall familiarity with that company's products was on average at higher level than familiarity with other companies' brands.

5.4
STUDY 1B

5.4.1
METHOD — MODEL 1B

While Model 1a focused on examining the effects of investors' product design -related perceptions and evaluations on their *financial expectations* about companies' stocks (as well as consideration of alternatives), Model 1b focused on examining the effects of investors' product design perceptions on their investment decisions *beyond* financial returns expected from companies' stocks. The structural PLS model specified as Model 1b is depicted, to its essential parts, in Figure 5 (p. 62). Note that for this second PLS model, the study setting involved framing the questions and/or variables as if the investment had been a choice between two stocks.

Specifically, the purpose of Model 1b was to test the hypotheses concerning the following main *dependent variables*:

a) DETERMINATION TO INVEST WHEN EQUAL FINANCIAL RETURNS
b) PREPAREDNESS TO INVEST WITH LOWER FINANCIAL RETURNS

For this model, the inquiry involved a quasi-manipulative setting (see the following section) whereby a respondent was:

- asked to retrospectively recall the time when he had invested in the focal (investee) company's stock,
- presented with the name of another, real stock-exchange-listed company ("comparison company"),
- requested to respond to questions pertaining to the perception and attitude constructs related to product design, concerning *both* the investee company *and* the comparison company, and
- requested to ponder his investment as if it had been a choice between the investee company and the comparison company.

Thus, the data for this model consisted of each respondent's

1. perceptions and attitudes (personal relevance, overall affect, familiarity) related to the product design of *both* the company in which he had invested (investee company) *and* another company (comparison company), at the time of his decision to invest in the former; and
2. view to his investment decision as if it had been a choice between the investee company and the comparison company.

Both data 1. and 2. above were, again, retrospective in nature.

The main *predictor variables* in Model 1a were theoretically and conceptually the same as in Model 1a:

- PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN and
- OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN$_{difference.}$
- FAMILIARITY WITH THE COMPANY'S PRODUCTS$_{difference}$

However, as implied above, the quasi-manipulative setting (related to PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN) was slightly different for Model 1b than for Model 1a – due to the framing of the questions in Model 1b as if the investment had been a choice between two stocks. The details of this quasi-manipulation will be described in the following section. This setting also involved slightly different measurement approach for the variables OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN and FAMILIARITY WITH THE COMPANY'S PRODUCTS, indicated by the subscripts "difference".

Note that I also included into Model 1b the additional mediating variable, WILLINGNESS TO SUPPORT THE COMPANY THROUGH INVESTMENT. The inclusion of this variable reflected the theoretical notion that the hypothesized effects in Model 1b may be direct as well as indirect, i.e., manifest directly and/or through the mediating variable of one's increased (conscious)

willingness to support the company, by investing in its stock (see section 3.2.1, p. 52). Moreover, FAMILIARITY WITH THE COMPANY was included as a variable between the predictor variable FAMILIARITY WITH THE COMPANY'S PRODUCTS and the main dependent variables, so that hypothesis H0 could be confirmed.

Finally, in addition to the paths shown in Figure 5, I included into the model a direct path from FAMILIARITY WITH THE COMPANY to PREPAREDNESS TO INVEST WITH LOWER FINANCIAL RETURNS. I included this path, despite its non-presence in the theoretical hypotheses, so that I would be able control for the occurrence of the corresponding effect – the occurrence of the effect in the data would indicate that my theoretical model/propositions were incomplete. Also, indicators of the investee companies as well as comparison companies were, again, included in the model as dummy control variables.

SPECIFICS OF THE STUDY DESIGN CONCERNING PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN. For Model 1b, not only was the (I) domain selected or quasi-manipulated respectively for each investee company in the study to be such a domain that the respondents (who had invested in the company) would likely have perceived the company's products to represent – as for Model 1a. But, Model 1b also involved selecting or quasi-manipulating (II) a comparison company for each of the focal companies. Specifically, a comparison company was selected to be such a company whose products the respondents would likely perceive as *non*-representative of the domain (I) in question. This way the study setting corresponded with the way the hypotheses H6 and H7 were framed.

Because of the controlled selections done by me as a researcher, one can consider the (I) selections of the domains for the focal companies and (II) the selections of the comparison companies to indeed be "quasi-manipulations". Moreover, to enable better generalizability of the results, I manipulated half of the respondents for each investee company to have one comparison company, while the other half to have another comparison

company. All in all, these quasi-manipulated product domains and comparison companies are listed in Table 6. For instance, for a tire company, I selected the domain (I) to be motoring/car-driving – like in Model 1a (Table 2). In this case, the comparison companies (II) were, in turn, manipulated to include a company producing interior decoration items and a company producing domestic tools – products that would not likely be perceived to support or represent the domain of motoring/car-driving.

Should the quasi-manipulation be successful (reported below), a subsequent analysis would be able to address the effects of the *degree* of the *personal relevance of a domain* which the investee company's products represented – but which the products comparison companies did *not* represent (due to the very manipulation) – on the dependent variables. The dependent variables would, in turn, take the form of contrasting a subject's willingness to invest in the stock of the focal (investee) company vs. that of the comparison company (as framed in the hypotheses, especially H6–H7).

In fact, Table 3 concerning Model 1a (p. 82) already presented the successfulness of the quasi-manipulation, when it comes to the presumption (I) that the selected domain for each investee company in the study was such a domain that the respondents who had invested in the company perceived the company's products to represent. What remains to be checked, for Model 1b, is the presumption (II) that the selected comparison companies' products would *not* be perceived to represent the same domains in question. These tests (or quasi-manipulation checks) are presented in Table 7. As can be seen from the table, for all manipulated domains and for all manipulated comparison companies, the investor-respondents overall *dis*agreed (mean<0.0) with statements claiming that a comparison company's products represented the selected domain. The means differed significantly from the neutral value of 0 at $p<.05$ level. Thus, the quasi-manipulation was successful also when it comes to the selection of the comparison companies.

Note that, the same quasi-manipulation setting also allowed me to address the effect of the differential *overall affects* as well as familiarities

Table 6.
The selected domains and comparison companies per focal/investee company, in Study 1b

Investee company	***Investee company's products***	***Quasi-manipulated domain X*** *(supposed to be represented by the investee company's products)*	***Quasi-manipulated comparison companies***	***Quasi-manipulated comparison companies' products*** *(supposed to be non-representative of domain X)*
A	car and other tires	motoring & car-driving	D; B	fashion/interior decoration; gardening and dom. tools
B	gardening and other domestic tools	gardening & visiting summer cottage	E; A	food products; car and other tires
C	sports equipment and apparel	sport	D; B	fashion/interior decoration; gardening and dom. tools

Table 7.
Tests for the assumption that the selected domains were domains that the investors perceived the comparison companies not to represent (Study 1b)

Quasi-manipulated [domain X]	***Item***	***Quasi-manipulated comparison company1: Mean***	***Quasi-manipulated comparison company2: Mean***
motoring/ car-driving	1: "The products of [comparison company D/B] supported/represented motoring very well."	D: -1.35***	B: -1.06***
	2: "[Comparison company D/B] was committed to developing products that support/represent motoring."	D: -1.19***	B: -1.10***
gardening/ visiting summer cottage	1: "The products of [comparison company E/A] supported/represented gardening (/visiting summer house) very well."	E: -0.38*	A: -1.09***
	2: "[Comparison company E/A] was committed to developing products that support/represent gardening (/visiting summer house)."	E: -0.42*	A: -0.96***
sport	1: "The products of [comparison company D/B] supported/represented sport very well."	D: -2.07***	B: -1.69***
	2: "[Comparison company D/B] was committed to developing products that support/represent sport."	D: -2.11***	B: -1.63***

** planned comparison of mean to value 0 (disagree-agree scale neutral) significant at p<.05 level*
**** planned comparison of mean to value 0 (disagree-agree scale neutral) significant at p<.001 level*

that the investors had towards the companies (investee vs. comparison company) on the dependent variables (hypotheses H9, H10, H0, and H2). Specifically:

1. the subject's overall affect for (and familiarity with) the company's products would be measured for both the investee company and the comparison company,
2. the difference in the affect (and familiarity) measures (i.e., investee company measure minus comparison company measure) would be calculated for each subject, and
3. the effect of this difference on the subject's relative willingness to invest in the focal (investee) company's stock vs. the comparison company's stock would be analyzed.

Due to these difference measures used in Model 1b, the variables in question have the subscript "difference":

- OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN$_{difference.}$
- FAMILIARITY WITH THE COMPANY'S PRODUCTS$_{difference}$
- FAMILIARITY WITH THE COMPANY$_{difference}$

Note again that for the predictor variable PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN, I did not use a difference-based measure, since the quasi-manipulated domain to which the measurement questions pertained was not represented by the comparison company's products (as per the successful quasi-manipulation of the comparison company). Hence, the degree of personal relevance of the domain in question would only affect investment interest in the focal company, whose products would represent the domain per the quasi-manipulation

Before the analysis of the data, one more procedure was conducted: respondents that indicated ownership of not only the investee company but also the comparison company presented to them (less than 10 % of respondents) were screened out from the data, in order to ensure similar comparison scenario among all the respondents included in the analyses. This

left Model 1b to be calculated with an effective sample of 293 investors (in contrast to 340 for Model 1a).

MEASURES – PREDICTOR VARIABLES. Since the predictor constructs in Model 1b were essentially the same as in Model 1a, the predictor variable measurements for Model 1b were based on similar questions as the predictor variable measurements in Model 1a. Yet, as mentioned in the above section, the variable OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN$_{difference}$ used in calculating Model 1b was the difference between the respondent's (sum) score concerning overall affect for the focal company's product design and his (sum) score concerning overall affect for the comparison company's product design. That is, the variable values consisted of each respondent's overall affect for the focal company's product design *minus* his overall affect for the comparison company's product design. Analogously, also the variables FAMILIARITY WITH THE COMPANY'S PRODUCTS$_{difference}$ and FAMILIARITY WITH THE COMPANY$_{difference}$ were difference measures. For the exact items used – which were the same as in Study 1a – see Table 4 (p. 84).

MEASURES – DEPENDENT VARIABLES. The measures for the dependent variables of Model 1b were new and developed by myself, again due to lack of earlier survey-based measures. Recall that the study setting behind Model 1b involved making the investor reflect his decision to invest in the focal (investee) company as if it had been a choice between the focal company and the comparison company. This setting was reflected in both the dependent variable measures of the model.

The first dependent variable, DETERMINATION TO INVEST WHEN EQUAL FINANCIAL RETURNS, was measured with a single-item indicator by asking the subjects:

> "If you had been convinced at the time of buying the [investee company]'s stock that the financial returns from the [comparison company's] stock would with absolute certainty be exactly the same as those of the [investee company]'s, how would you have invested?"

The responses were recorded on a bipolar 7-point scale anchored by:

- 0="Which stock to invest in would have made no difference to me"

  ...
- 6="I would still have invested in [investee company]'s stock".

The other dependent variable, PREPAREDNESS TO INVEST WITH LOWER FINANCIAL RETURNS, was measured with a single-item indicator as well, by asking the subjects:

> "How much greater financial returns (assuming that the investment time horizon and investment risk would have stayed the same) should you have been promised from the [comparison company]'s stock, so that you would have chosen to invest in [comparison company]'s stock instead of [investee company]'s stock? *Circle a percentage."*

The responses were recorded by asking the subjects to choose a percentage out of the following:

- 1% (higher),
- 2% (higher),
- 5% (higher),
- 10% (higher),
- 20% (higher),
- 30% (higher),
- 50% (higher),
- 100% (higher).

A logarithm transformation was performed on the reported percentage to obtain the variable value.

The mediating variable of the model, WILLINGNESS TO SUPPORT THE COMPANY THROUGH INVESTMENT, was measured by asking the subjects: "How strong a desire did you have to support [investee company]'s business

by investing in its stocks?". The responses were recorded on a 7-point bipolar scale, anchored by:

- 0="no such desire at all"

  ...
- 6="very strong desire".

DISCRIMININANT VALIDITY AND MULTICOLLINEARITY. Since the predictor variables in Model 1b were theoretically the same and based on the same items as in Model 1a, the discriminant validity among the predictor variables was similar as with Model 1a, i.e., good. With the same formula used with Model 1a (p. 89), the correlations (Table 8) between the predictor variables in Model 1b gave results below .5 for all the combinations. The discriminant validity among the dependent constructs was satisfactory, as well, with correlations remaining below .5 there, too.

As mentioned in connection to Model 1a, discriminant validity of the predictor variables is also related to the concern about multicollinearity. The correlations between the predictor variables should not be too high, since too high between-variable correlations can make the PLS path modeling unstable and the results unreliable. In any case, since in Model 1b (like in Model 1a) correlations of the predictor variables remained well below .5, multicollinearity should not be a serious concern.

5.4.2
RESULTS — MODEL 1B

DESCRIPTIVE STATISTICS CONCERNING STOCK INVESTMENT WILLINGNESS BEYOND EXPECTED FINANCIAL RETURNS. Before reporting the hypotheses testing results from the PLS analysis of Model 1b, it is interesting to look into certain descriptive statistics concerning the dependent variables included in the model.

Notably, based on standard finance notion, one might think that all the

Table 8.
Correlations between the main variables of Model 1b

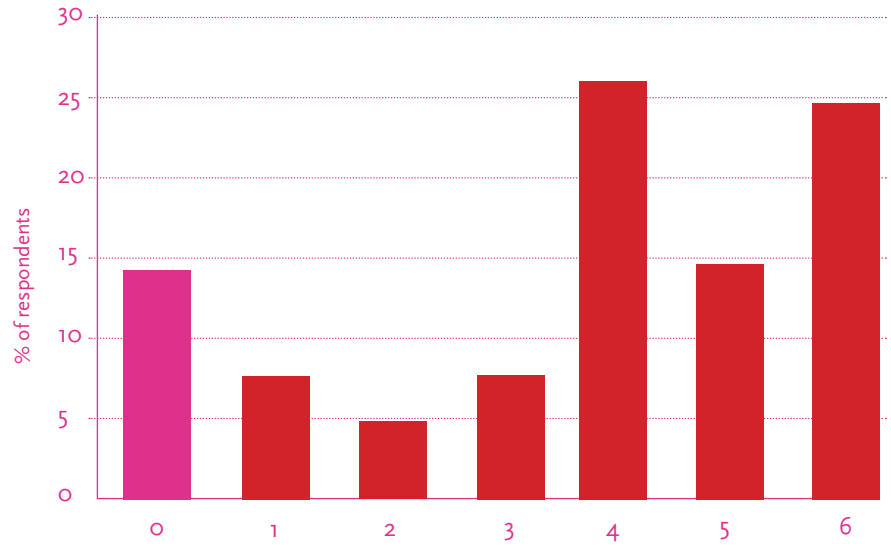
	PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN	OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN$_{diff}$	FAMILIARITY WITH THE COMPANY'S PRODUCTS$_{diff}$	FAMILIARITY WITH THE COMPANY$_{diff}$	WILLINGNESS TO SUPPORT THE COMPANY BY INVESTING	DETERMINATION TO INVEST WHEN EQUAL FINANCIAL RETURNS	PREPAREDNESS TO INVEST WITH LOWER FINANCIAL RETURNS
PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN	0.72						
OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN$_{diff}$	0.16	0.89					
FAMILIARITY WITH THE COMPANY'S PRODUCTS$_{diff}$	0.18	0.42	N/A				
FAMILIARITY WITH THE COMPANY$_{diff}$	0.11	0.20	0.30	N/A			
WILLINGNESS TO SUPPORT THE COMPANY BY INVESTING	0.27	0.15	0.16	0.01	N/A		
DETERMINATION TO INVEST WHEN EQUAL FINANCIAL RETURNS	0.20	0.23	0.22	0.19	0.38	N/A	
PREPAREDNESS TO INVEST WITH LOWER FINANCIAL RETURNS	0.05	-0.03	0.06	-0.03	0.40	0.46	N/A

Notes: Numbers on the diagonal are Cronbach's alpha scores. N.A. = no alpha score calculated because the construct is measured by single item.

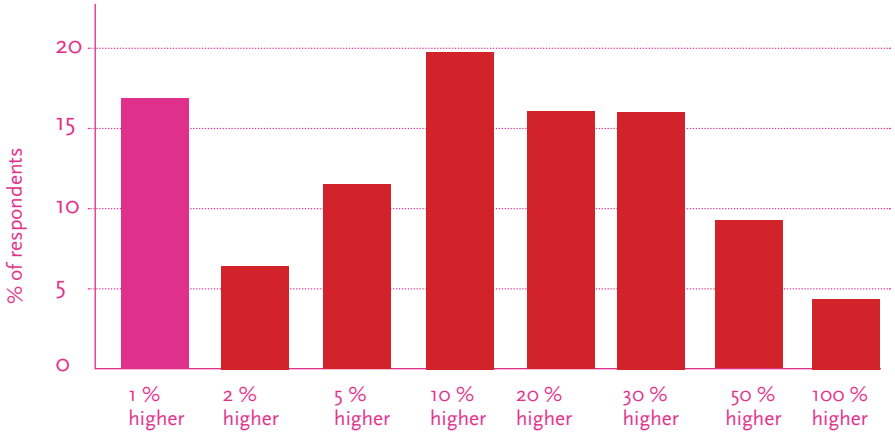
investors' responses would fall on a (response) value indicating that only financial returns and risks mattered in investors' investment decisions. In contrast, the behavioral hypotheses implicated in Model 1b (H6-H7, H9-H10) presume that individuals may have extra willingness to invest in a company's stock, beyond its expected financial returns/risk. Examining the actual distribution of values in my data on the two dependent variables in question (DETERMINATION TO INVEST WHEN EQUAL FINANCIAL RETURNS and PREPAREDNESS TO INVEST WITH LOWER FINANCIAL RETURNS), the behavioral presumption receives support. Figure 7 presents the frequency distributions of respondents' answers on the items pertaining to the dependent variables.

Indeed, with regard to DETERMINATION TO INVEST WHEN EQUAL FINANCIAL RETURNS (upper panel, Figure 7), only 14.3 % of the investors answered according to the leftmost benchmark value, indicating that if offered an alternative investment with equal financial returns and risk, they would have been indifferent as to which investment to choose. The rest, 85.7 %, exhibited more or less strong determination to invest in the focal (investee) company's stock, beyond its expected financial returns/risk. In a similar vein, only 16.8 % of the respondents answered according to the leftmost benchmark value on PREPAREDNESS TO INVEST WITH LOWERED FINANCIAL RETURNS (lower panel, Figure 7), indicating that even a minimal increase (1%) in risk-free financial returns offered by another (comparison) company's stock would have made them switch investments. The rest, 83.2 %, exhibited preparedness to invest in the focal company's stock with lower financial returns offered from that stock than from another stock.

TESTS OF HYPOTHESES. As results for Model 1b, I list the path coefficients and t-values of the calculated model in Table B2 of Appendix B. Figure 8 presents these results in a simplified form, with significant paths/effects noted. In total, the model explains 22.1 % of DETERMINATION TO INVEST WHEN EQUAL FINANCIAL RETURNS and 21.2 % of PREPAREDNESS TO INVEST WITH LOWER FINANCIAL RETURNS, respectively. In the calculated model, both PERSONAL



DETERMINATION TO INVEST WHEN EQUAL FINANCIAL RETURNS:
0 = indifferent regarding which stock to choose (focal company vs. comparison company) in case the stocks would have had equal expected financial returns
... 6 = determinate to invest in focal company's stock even if the comparison company's stock would have had equal expected financial returns



PREPAREDNESS TO INVEST WITH LOWERED FINANCIAL RETURNS:
How much higher (risk-free) financial returns from another (comparison) company's stock would the respondent have required so as to switch his investment to that stock?

Figure 7.
Respondents' willingness to invest in the focal company's stock beyond its expected financial returns/risk (Study 1b)

RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN and OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN$_{diff.}$ have significant (p <.05) direct and/or indirect effects on the dependent variables, in support of my hypotheses. In addition, all significant parameters are in the proposed directions, providing general support for the hypotheses.[29]

With regard to the dependent variable DETERMINATION TO INVEST WHEN EQUAL FINANCIAL RETURNS, the direct effect on this variable by OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN$_{diff.}$ is found to be positive, and highly significant (coeff.=+.27, p<.001). Thus, the more positive overall affect an investor has for a particular company's product design – relative to another company's product design – the more determined the investor is to invest in that (former) company's stock rather than in the other company's stock, in case the expected financial returns from the stocks are approximately similar. This finding supports hypothesis H9. Moreover, the direct effect of PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN ON DETERMINATION TO INVEST WHEN EQUAL FINANCIAL RETURNS is found to be positive, as well, and marginally significant (coeff.=+.06, p<.10). This hints that the higher personal relevance an investor attaches to a life domain that a company's products represent, the greater is his determination to invest in that company's stock rather than in other another company's stock that has approximately similar expected financial returns/risks. This finding supports hypothesis H6.

Furthermore, the analysis reveals the following significant, *indirect* paths – *through* the mediating variable WILLINGNESS TO SUPPORT THE COMPANY BY INVESTING – from the predictor constructs towards DETERMINATION TO INVEST WHEN EQUAL FINANCIAL RETURNS:

[29] Note that I eliminated the interaction terms of company dummies and predictor variables from the final Model 1b presented here, in order to simplify the model and because the interaction terms were not highly significant. However, the dummy company variables were left into the model so that company/domain-specificity of the results could be detected.

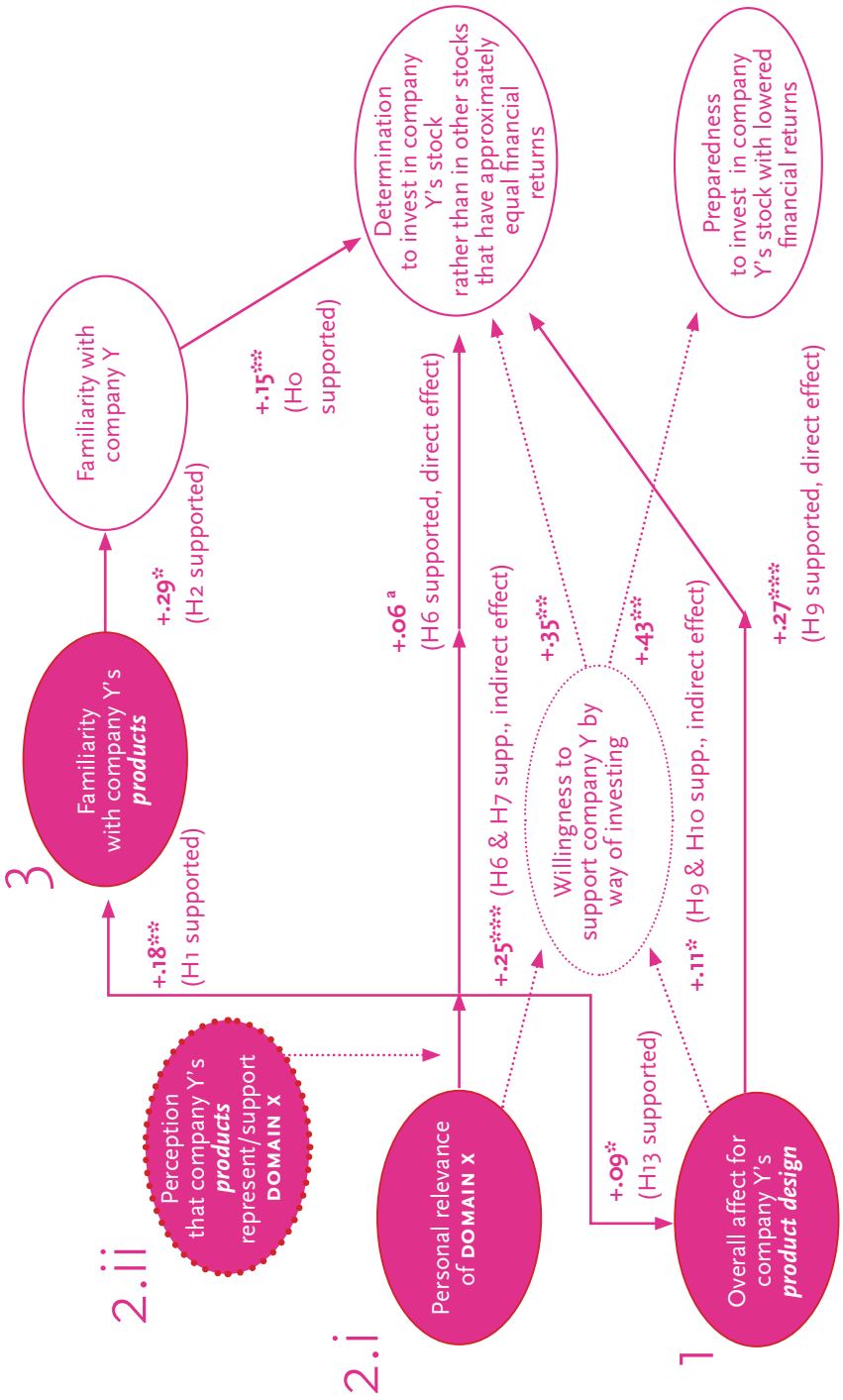


Figure 8.
Results, Model 1b: The effects of investors' evaluations of a company's product design on their extra investment willingness, *beyond expected financial returns*

1a) OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN$_{diff.}$ → WILLINGNESS TO SUPPORT THE COMPANY BY INVESTING (+.11, p<.05) ,

1b) PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN → WILLINGNESS TO SUPPORT THE COMPANY BY INVESTING (+.25, p<.001), and

2) WILLINGNESS TO SUPPORT THE COMPANY BY INVESTING → DETERMINATION TO INVEST WHEN EQUAL FINANCIAL RETURNS (+.35, p<.001)

Considered together, these effects mean that increases in the personal relevance of a life domain represented by a company's products as well as in overall affect for the company's product design *both* increase investors' willingness to support the company by investing in its stock – which in turn increases their determination to invest in the company's stock rather than in other stocks that have approximately similar expected financial returns. Thus, both hypothesis H6 and H9 receive further support, when it comes to indirect effect by the two product design -related explanatory factors on determination to invest in a company – as channeled via the investor's willingness to support the company by investing.

With regard to the dependent variable PREPAREDNESS TO INVEST WITH LOWER FINANCIAL RETURNS, the direct effects by PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN and OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN are non-significant. However, we find, again, the following significant *indirect* paths from both the explanatory constructs towards PREPAREDNESS TO INVEST WITH LOWER FINANCIAL RETURNS, *through* the mediating variable WILLINGNESS TO SUPPORT THE COMPANY BY INVESTING:

1a) OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN$_{diff.}$ → WILLINGNESS TO SUPPORT THE COMPANY BY INVESTING (+.11, p<.05) , and

1b) PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN → WILLINGNESS TO SUPPORT THE COMPANY BY INVESTING (+.25, p<.001) and

2) WILLINGNESS TO SUPPORT THE COMPANY BY INVESTING → PREPAREDNESS TO INVEST WITH LOWER FINANCIAL RETURNS (+.43, $p<.001$)

Considered together, these effects mean that personal relevance of a domain represented by a company's products and overall affect for the company's product design increase investors' willingness to support the company by investing in its stock – which further increases their preparedness to invest in the company's stock even with lowered financial returns. Thus, both H7 and H10 receive support, when it comes to indirect effect by the two product design -related explanatory factors on preparedness to invest in the company's stock with lowered financial returns – as channeled via conscious willingness to support the company by investing.

In very simple terms, the two factors related to a company's product design thus effectively generate willingness to invest in the company's stock, even if the investment meant giving up on some financial returns.

Furthermore, when it comes to FAMILIARITY WITH THE COMPANY'S PRODUCTS$_{diff.}$, this variable is found to have significant positive effect on FAMILIARITY WITH THE COMPANY$_{diff.}$ (coeff.=+.29, $p<.05$), which in turn has significant positive effect especially on DETERMINATION TO INVEST WHEN EQUAL FINANCIAL RETURNS (coeff.=+.15, $p<.01$). These results support my hypotheses H2 and H0 – consistent with the earlier behavioral finance suggestion (Frieder & Subrahmanyam, 2005) that familiarity with a company's products increases investment attraction. In contrast, the control path from FAMILIARITY WITH THE COMPANY$_{diff.}$ TO PREPAREDNESS TO INVEST WITH LOWER FINANCIAL RETURNS remains non-significant, as expected – there is no theoretical reason, either, to expect that mere familiarity with a company would lead to investors' being prepared to give up on any financial returns.

Finally, with regard to the dummy company variables, many of these variables show significant effects on the dependent variables. This suggests that similarly as in Model 1a, there are likely to be certain company- and/or industry-specific factors unidentified in Model 1b that additionally explain

some of individuals' extra willingness to invest in companies' stocks beyond financial returns, and/or strengthen or weaken the impact of the explanatory constructs thereon. For example, the comparison company being "D" is found to have significant, negative effect on PREPAREDNESS TO INVEST WITH LOWER FINANCIAL RETURNS (in a focal company's stock). This finding may result from the fact that the investors on average would not have had much preparedness to give up on financial returns when investing in a focal company (e.g., A or C), in case the comparison company presented to them was company D.

6
Study 2

Study 2 was designed to address, implicitly, all the hypotheses H0–H13 – by way of explicitly testing the corollary hypothesis H14, as explained in sections 3.2.4 and 4.2.2. The corollary hypothesis H14 expected that product design emphasis in a company's investment advertisement has positive effect on an investor's general interest to invest in the company's stock.

In essence, Study 2 complements Studies 1a and 1b by utilizing different kind of data – prospective (rather than retrospective) – and by applying the most traditional and well-accepted methodological approach to studying individuals' psychology and behavior, i.e., randomized experiment. In order to test hypothesis H14, I replaced the multiple dependent variables of the causal maps (Figures 4 and 5, pp. 61-62) with a single dependent variable that addresses an investor's general-level interest to invest in a company (INTEREST TO INVEST). The main explanatory variable was, according to hypothesis H14, the degree to which the company's product design is emphasized in an investment advertisement of the company. Analysis of variance (ANOVA) was the main analysis method to test the hypothesis. Nevertheless, I also included the main explanatory variables of the dissertation (PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN and OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN) to the analysis, by performing additional analyses of covariance (ANCOVA) where these variables acted as covariates.

6.1
METHOD – STUDY 2

SUBJECTS. For Study 2, the subjects were recruited at "stock exchange evening" events of the Finnish Foundation for Share Promotion. This nonprofit foundation arranges a series of such events twice a year, and they are open to the public and targeted especially to people who are interested and (actively) engaged in making investments in the stock market. The duration of one event is a couple of hours, during which the investors get to listen to

Table 9.
Description of the subjects of Study 2: Personal characteristics of the investor-respondents

	Overall sample
Gender	
female	32.0%
male	68.0%
Age	
below 25	4.0%
25– [35]	9.1%
36–45	8.5%
46–55	16.5%
56–65	39.2%
over 65	22.7%
Education (highest)	
middle school	1.7%
high school	9.6%
vocational school	9.6%
college/bachelor	31.1%
university/master	40.7%
licenciate/doctor	7.3%
Yearly income	
1–50 000€	55.9%
50 001–100 000€	32.8%
100 001–150 000€	7.9%
150 001–250 000€	1.7%
250 001–500 000€	1.1%
500 001–1000 000€	0.6%
Total no. of stocks owned	
0	6.3%
1–2 stocks	6.8%
3–5 stocks	15.9%
6–10 stocks	24.4%
11–20 stocks	30.7%
21–30 stocks	10.2%
over 30 stocks	5.7%
Stock following activity	
daily	14.9%
weekly	37.1%
monthly	23.4%
once in three months	9.7%
once in six months	5.1%
once a year	6.3%
once in two years	3.4%

presentations by executives of publicly-listed corporations as well as experts of the general economy.

Subjects were recruited to the study at four events. At each event, a stand was arranged in the proximity of the auditorium door where the event was held. A poster informing about the possibility to participate in the study was attached to the wall beside the stand. A set of papers – including a cover letter, the study stimuli, and a return envelope – was given to investors passing by. Almost all passers-by were willing to take the papers with them (until the material ran out). The text of the cover letter is presented in Appendix C. The subjects were informed of a possibility to win book prizes (with a value of approximately 50 euros) in a lottery, should they fill in and return the questionnaire. In total, 605 copies of the study material were distributed over the four events. Usable responses were received back from 187 investors, resulting in a rather conventional response rate of 31 %.

Due to the non-perfect response rate, again, there was a potential non-response bias and, especially, the possibility that those investors who responded to the survey (appr. 30% of the contacted investors) might have different tendencies with respect to the hypotheses than the non-respondents – similarly as in Studies 1a and 1b (see section 5.1). Thus, I again used the common procedure to control for the bias in question: distinguishing the respondents who answered late (i.e., closer to the deadline) from the early respondents and analyzing the differences between these two groups. The early vs. late respondent check showed no significant differences between earlier and later respondents. This indicates that non-response/self-selection bias should not be a very serious concern.

A description of the investors in the final sample of subjects in Study 2 is provided in Table 9, in terms of a set of personal background variables. The background variables include gender, age, education, yearly income, total number of stocks owned, and stock following activity.

As mentioned in connection with Studies 1a and 1b (section 5.1), I am unaware of any studies that would map the characteristics of average Finnish stock investors, which means that we are unable at this time to compare

the characteristics of the subjects in Study 2 to the general stock investor population. Comparisons between the subject in Study 2 (Table 9) and the sample in Studies 1a and 1b (Table 1) can be made, however. Like in Studies 1a/1b, the distribution of investor characteristics in the sample for Study 2 seems to accord to an intuitive notion of individual investors: the distribution is bent towards middle-aged (rather than very young or very old), college/university educated, and medium/high-income people. Most of the investors are have also moderately diversified stock portfolios (with 6 or more stocks) and tend to follow their stocks at least weekly.

Due to different answering options (scales) used in Study 2 vs. Studies 1a/1b, the differences between distributions of the investor characteristics cannot, unfortunately, be tested statistically. Yet, by inspection, the investors in Study 2 appear to be more often female and slightly older. This might be due to the facts that women are more ready and willing to attend stock investment events than men and that older (perhaps retired) people have more time to go to stock investment events than younger people. After all, the subjects of Study 2 were recruited from stock investment event (which requires time to attend), whereas the respondents of Studies 1a/1b were recruited straight from stockowner registers of the focal companies.

In any case, the general similarity in the distribution of investor characteristics in the samples of Studies 1a/1b and 2 can be considered an indication of the fact that both the samples reflected a quite general population of (Finnish) people who save and invest in stocks.

DESIGN. Study 2 employed a two-way factorial design. For the first factor, (1) investor-subjects were assigned randomly to conditions according to how companies (investment targets) were presented to them in an investment advertisement (ad). In the first condition/treatment, subjects encountered a company presentation/advertisement which markedly emphasized the potential personal relevance of the company's products as well as their use value ('product design emphasis in company investment ad' = high). This condition would presumably serve to prime the subjects to process product-

related relevance and affect more saliently than the second condition. In the second condition, the subjects encountered a company presentation which emphasized the products of the company and their potential personal relevance and value to a lesser extent ('product design emphasis in company investment ad' = low).

The main purpose of the second factor (2) was to enhance the external validity and generalizability of the study over different kinds of companies. Hence, the subjects were randomly assigned to evaluate one of four alternative types of companies, distinct in terms of the type of products produced by the companies. The companies' product types were:

1. everyday consumer products (everyday)
    - ordinary products designed for consumer's daily use: eyeglasses
    - home country England
2. high-tech business/consumer products (high-tech)
    - high-technology products designed for and used by both businesses and consumers: lenses and other optical products
    - home country Germany
3. medical products (medical)
    - medical products designed for and used by both businesses and consumers: pharmaceutical treatment products
    - home country France
4. business/consumer services (service)
    - service products designed for and used by both businesses and consumers: currency exchange services
    - home country England

As implied in the above list, I chose all the companies to be *non-domestic* i.e., non-Finnish. The reason for this was simply to put the research in the interesting context of cross-border investing – and partially to complement

Studies 1a and 1b, wherein the companies were domestic. Note that since *all* the companies addressed in Study 2 were non-domestic, the analysis and results should not be confounded by "home bias" due to investors' general preference for domestic over non-domestic companies (see reviews by e.g., Campbell & Kräussl, 2007; Karlsson & Nordén, 2007; Morse & Shive, 2006; Sercu & Vanpée, 2007). Indeed, home bias could confound the results if part of the included companies were domestic and part of them non-domestic – but should not confound the results when all the companies are non-domestic, as here. Moreover, the companies were selected from the main Central/Western European countries (England, Germany, France), since these countries fall, from Finnish perspective, to the same category in terms of distance, size, and reputation (i.e., "the big and developed Western European countries"). In effect, the geographic distances of the countries in question from Finland are quite similar, between 1,000–2,000 kilometers – as are their "mental distances". Therefore, home bias should not be a serious confounding effect in the sense of differential distances to the company home bases (cf. Grinblatt & Keloharju, 2001), either.

In sum, the study employed a 2 X 4 design, with 'product design emphasis in company investment ad' (high or low) and 'company/product type' (everyday; high-tech; medical; service) serving both as between-subjects factors.

PROCEDURE. In the cover letter distributed with the study material (Appendix C), the subjects were told that the questionnaire related to research that studied private individuals' stock investments and, especially, their interest to invest in various companies in connection with stock issues (such as initial public offerings, IPOs). It was underlined that there would be no "right answers" to the questions and that the person should respond to them according to his personal, current views and opinions.

In the actual study material, a subject was first presented with two pages of background questions about his personal demographics and characteristics as an investor. The background questions were followed by the stimuli (company presentation/ad), which was followed by questions pertaining to

the dependent variable (INTEREST TO INVEST). Thereafter, questions pertaining to the company-specific covariates were presented.

STIMULI AND MANIPULATIONS. The information content (sentences) of the company presentations/ads were the same in the high and low conditions of 'product design emphasis in company investment ad' – so that differential amount of information conveyed would not confound the results. Yet, the high condition for the factor was achieved, in effect, by (i) adding to the company presentation a heading that highlighted in bold typeface the products of the company and their potential personal relevance and use value (e.g., "**Carl Zeiss – premium lenses for the sake of faultless vision**"). Moreover, (ii) one sentence in the presentation was underlined and set in italics, namely a sentence which further highlighted how the subject might personally connect with the company's products (e.g., "In other words: *even in your own pocket, there might be a product whose functionality is ensured by Zeiss's technology").* To see what the stimuli looked like for subjects in high condition of 'product design emphasis in company investment ad', see the left column of Table 10.

In the low condition of the factor, the company ad lacked both the heading as well as the highlighting of the sentence at the end of the text (i.e., the underlining and italics).[30] Consequently, even if the subjects in the low condition had the same text to process (in literal terms), they would not likely pay so much attention to potential product-related relevance and affect associated to the company. To see what the stimuli looked like for subjects in low condition of 'product design emphasis in company investment ad', see the right column of Table 10. Note however, again, that the actual body texts

[30] To further enhance the strength of the manipulation for 'product design emphasis in company investment ad', the aforementioned heading (e.g., "Carl Zeiss – premium lenses for the sake of faultless vision") was repeated, in the high condition, next to the question pertaining to the dependent variable measure. In the low condition, no such heading was presented in connection with the dependent variable question. See the section on 'Measures – Dependent variable' for details.

indeed included the same wordings and sentences in both the conditions. This tactic was chosen so that the objective information contents in both conditions would indeed be the same and that any effects found on investment willingness would not be due to different amounts of information conveyed about the firms.

The manipulation of the 'company/product type' factor involved, simply, presenting to a subject the ad of one of the four alternative companies, featuring the company name, logo, and presentation text (see the four rows of Table 10). Notably, the presentation texts for each firm were of similar length (appr. 120 words) and followed a similar pattern across the conditions. The form of the first sentence was: "[Company X] is a [country C]-based company that develops, manufactures, and sells [company X's product categories] to [company X's typical customers or customer industries]". This was followed by a sentence describing the use purpose or value of the company's products or product classes, the particular use value they provide and particular user groups towards which they are targeted.

The following (second last) sentence, then, was the one related to the manipulation of 'product design emphasis in company investment ad' – i.e., underlined and put in italics in the high product emphasis condition, as explained above (e.g., "In other words: even in your own pocket, there might be a product whose functionality is ensured by Zeiss's technology"). Finally, the last sentence of the company presentation was (regardless of the condition of the 'product design emphasis…' factor): "[Company X]'s international business has grown fairly quickly in the past years, and its future prospects as a company are fairly promising." The reason for having this kind of concluding sentence was, on one hand, to ensure that the subjects in each condition would remain in the investing mindset before starting to respond to the actual questions. On the other hand, the fact that the company ad for subjects in each condition ended with the same sentence – a statement about the company as a business/investment target – would ensure that the explicit information conveyed about the companies as investment targets would be as similar as possible.

Table 10.
Stimuli presented to the experiment subjects in Study 2, according to the conditions of the main factors

Company/ product type	*Product design emphasis in company investment ad*	
	high	***low***
every-day	**Specsavers – puts your sight into order.** Specsavers is an England-based company that develops, manufactures, and sells eyeglass frames to consumers. The company specializes on serving buyers that seek for eyeglasses that are less inexpensive than normal. It has retail outlets in a few countries around Europe, also Finland. In other word: *you may also have yourself have encountered Specsavers's ads or stores when you have been buying glasses for yourself or for a family member.* Specsavers's international business has grown fairly quickly in the past years, and its future prospects as a company are promising.	Specsavers is an England-based company that develops, manufactures, and sells eyeglass frames to consumers. The company specializes on serving buyers that seek for eyeglasses that are less inexpensive than normal. It has retail outlets in a few countries around Europe, also Finland. In other word: you may also have yourself have encountered Specsavers's ads or stores when you have been buying glasses for yourself or for a family member. Specsavers's international business has grown fairly quickly in the past years, and its future prospects as a company are promising.
high-tech	**Carl Zeiss – premium lenses for the sake of faultless vision** Carl Zeiss is a Germany-based company that develops, manufactures, and sells optics and lens products to consumers and various industries, as well as licenses its trademark to selected companies. The products, such as eyeglass lenses, contact lenses, and camera lenses, are manufactured with premium materials and techniques. The high quality and faultlessness of the end products is important in their daily use, whether the question is about spectacles or the lens of a cell phone camera. In other words: *even in your own pocket, there might be a product whose functionality is ensured by Zeiss's technology.* Zeiss's international business has grown fairly quickly in the past years, and its future prospects as a company are promising.	**Carl Zeiss** is a Germany-based company that develops, manufactures, and sells optics and lens products to consumers and various industries, as well as licenses its trademark to selected companies. The products, such as eyeglass lenses, contact lenses, and camera lenses, are manufactured with premium materials and techniques. The high quality and faultlessness of the end products is important in their daily use, whether the question is about spectacles or the lens of a cell phone camera. In other words: even in your own pocket, there might be a product whose functionality is ensured by Zeiss's technology. Zeiss's international business has grown fairly quickly in the past years, and its future prospects as a company are promising.

Product design emphasis in company investment ad

Company/ product type	***high***	***low***
medical	**Novexel – cures for difficult infections.**  Novexel is a France-based company that develops, manufactures, and sells cures and medicines for pharmaceutical industry, hospitals, and drug users. The kind of products and cures that Novexel produces are important in treating difficult infections, when normal antibiotics are not effective. In other words: *If an acquaintance of yours some time ends up to a hospital for a difficult infection disease, it might be that he will be treated with a medical product developed by Novexel.* Novexel's international business has grown fairly quickly in the past years, and its future prospects as a company are promising.	 Novexel is a France-based company that develops, manufactures, and sells cures and medicines for pharmaceutical industry, hospitals, and drug users. The kind of products and cures that Novexel produces are important in treating difficult infections, when normal antibiotics are not effective. In other words: If an acquaintance of yours some time ends up to a hospital for a difficult infection disease, it might be that he will be treated with a medical product developed by Novexel. Novexel's international business has grown fairly quickly in the past years, and its future prospects as a company are promising.
service	**Travelex – makes moving and trading abroad easy**  Travelex is an England-based company that develops, manufactures, and sells products and services related to currency exchange, travelers' checks and international payment transactions for small and medium sized enterprises and consumers. The purpose of this kind of products/services is to make international traveling and trade as easy as possible, and Travelex focuses especially on service small firms and consumers in this regard. In other words: *you might have encounter Travelex's services or outlets even yourself, when traveling in Europe or elsewhere in the world* Travelex's international business has grown fairly quickly in the past years, and its future prospects as a company are promising.	 Travelex is an England-based company that develops, manufactures, and sells products and services related to currency exchange, travelers' checks and international payment transactions for small and medium sized enterprises and consumers. The purpose of this kind of products/services is to make international traveling and trade as easy as possible, and Travelex focuses especially on service small firms and consumers in this regard. In other words: you might have encounter Travelex's services or outlets even yourself, when traveling in Europe or elsewhere in the world. Travelex's international business has grown fairly quickly in the past years, and its future prospects as a company are promising.

MEASURES — DEPENDENT VARIABLE. The dependent variable INTEREST TO INVEST was measured, in the present study, after presenting the subjects an investment scenario. The idea was to present the subject a scenario whereby he should imagine having a certain amount of money at hand – an amount that he would have supposedly decided to invest in certain stock(s). After presenting the scenario, the subject would reflect his interest in investing the money in question in the stock of the focal company. The amount of money at stake was set to be significant, yet under 10 % of the value of the subject's stock portfolio – the final figure used in the scenario was 7%. In its entirety, the scenario read as follows (as translated in English; the original was in Finnish):

> "Let's now assume that you have just sold a certain stock investment of yours (at profit). As a result, you have an amount of *R euros* of "discretionary" money, equivalent of 7 percent of the value of your stock portfolio (for instance, 7 000 € of money if the value of your stock portfolio is 100 000 €). Now, you have already decided that you will invest that sum of money in appropriate stocks.
>
> Please describe, in the table below, your interest to invest the aforementioned *R euros* in the stock of [company X], [company Y], and [company Z], respectively, in case all of these firms were listed in the same international stock exchange, NasdaqOMX.
>
> NOTE. According to your bank/advisor, the "transaction costs" (trading fees, account fees, etc.) as well as the ease of making the investments would be the same, regardless of whether you invest in [company X], [company Y], or [company Z] stock (even if the home countries of the firms are different)."

Note that the scenario, as well as the questions, pertained to not only the focal company (Central European) of the study but also to two other compa-

nies (Finnish and Swedish). However, for reasons of simplicity, the analysis in the present study focuses only on one of the companies (the Central European one) – this is to avoid modeling the country effects in investing, which are beyond the scope of the present study or dissertation. Note also that it was emphasized to the subjects that in terms of transaction costs (trading fees, account fees etc.), investing in the foreign stocks offered would not be harder than investing in domestic stocks.

With reference to the aforementioned amount of money, *R euros* (7 % of the total value of the respondent's stock portfolio), the dependent variable INTEREST TO INVEST was measured by asking the subject "How interested would you be to invest *R euros* (or a significant part of it) in [company X]?". The answers were recorded on a 7-point scale, anchored by: "0= not at all interested"... "6=extremely interested".

Note that – as described already in footnote 30 (p.120) – the heading related to the manipulation (e.g., "Carl Zeiss – premium lenses for the sake of faultless vision") was repeated in the high condition of 'product design emphasis in company investment ad' next to the question pertaining to the dependent variable measure. In the low condition, no such heading was presented. Thus, the actual question was, in the high condition, presented in the following form (Figure 9):

Question	***Answering options***	***Answer*** *(number 0-6)*
Carl Zeiss – premium optics for multiple purposes How interested would you be to invest *R* euros (or a significant part of it) in **Zeiss?**	**0** = not at all interested **...** 6 = extremely interested	

Figure 9.
Presentation of the dependent variable question in the condition: 'product design emphasis in company investment ad'=high (Study 2)

In the low condition of 'product design emphasis in company investment ad', the presentation of the question was, in turn, as follows (Figure 10):

Question	***Answering options***	***Answer*** *(number 0-6)*
How interested would you be to invest R euros (or a significant part of it) in **Zeiss**?	0 = not at all interested ... 6 = extremely interested	

Figure 10.
Presentation of the dependent variable question in the condition: product design emphasis in company investment ad'=low (Study 2)

COVARIATES. The covariate PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN was measured, in the present study, with two items. Both items were measured with 7-point scales. The items were (with their respective anchors)[31]:

1. "Do you feel that the firm's product domain is personally important to you?"
    - "0 = the product domain is significantly less important to me *than to an average person in the street*"

      ...

[31] Before these questions, the product domains of the companies were indicated to be: "eye vision" in the case of the 'everyday' product company (the products of which were eyeglass frames); "healthcare" in the case of the 'medical' product company (the products of which were pharmaceutical treatment products); "international trade and mobility" in the case of the 'service' company (the products of which were currency exchange services); and "optics" in the case of the 'high-tech' product company (the products of which were lenses and optical products).

- "6 = the product domain is significantly more important to me *than to an average person in the street*"

2. " Is the firm's product domain 'close to your heart'?"
   - "0 = not at all close to my heart"

     ...
   - "6 = highly close to my heart"

The reliability of the two-item scale was good; the Cronbach's alpha was .80. The final variable value was obtained as a sum of the subject's responses to the two items.

The covariate OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN was measured, in the present study, with a three-item scale, each item measured on 7-point continuum. The three items were (with their respective anchors):

1. How good do you think or believe that the firm's products/services are in terms of **functionality or usability**?
   - "0 = very bad"

     ...
   - "6 = very good"
2. How good do you think or believe that the firm's products/services are in terms of **design**?
   - "0 = very unattractive"

     ...
   - "6 = very attractive"
3. Considering the firm's products, what is your **opinion** about the firm's product trademark?
   - "0 = I don't like the product trademark at all"

     ...
   - "6 = I like the product trademark very much"

Notably, besides attractiveness (item 2) and overall opinion/likeability (item 3), functionality and usability (item 1) is commonly viewed to

be among main the evaluative dimensions for products in contemporary design research (e.g., Buchanan, 2001; Jordan, 2002; Norman, 2004). The reliability of this three-item scale was also good, as it achieved a Cronbach's alpha of .85. The final variable value was obtained as a sum of the subject's responses to the three items.

The final covariate FAMILIARITY WITH THE COMPANY – meant as a control variable – was measured with a single-item scale. The subject was asked: "How familiar were you with this company (before receiving/answering this questionnaire)?" The responses were recorded on a 7-point scale, anchored by:

- "0 = not at all familiar"

...

- "6 = I was very familiar with the company".

6.2
RESULTS – STUDY 2

No manipulation checks were necessary in the present study. Manipulation of the 'company/product type' was *de facto* effective, since the firms were different and of rather varying type. Also the manipulation of 'product design emphasis in company investment ad' was *de facto* effective, since the intrinsic features (heading, underlining&italics) of the message form unquestionably varied across the two conditions, which makes manipulation checks unnecessary (see O'Keefe, 2003).

THE EFFECT OF PRODUCT DESIGN EMPHASIS IN COMPANY'S INVESTMENT AD (HYPOTHESIS H14). Hypothesis H14 predicted that high 'product design emphasis in company investment ad' would have positive effect on an individual's INTEREST TO INVEST in the company. This hypothesis was examined in a 2 X 4 analysis of variance (ANOVA), where the other factor was 'company/product type': everyday; high-tech; medical, or service (see Table 11 for cell means).

Table 11.
Means (and standard deviations) for interest to invest in the company in Study 2

Company/ product type	*Low product design emphasis in company investment ad*	*High product design emphasis in company investment ad*
Everyday	1.79 (1.82)	2.87 (1.63)
High-tech	2.95 (1.93)	3.14 (1.71)
Medical	2.53 (2.03)	3.00 (1.77)
Service	1.14 (1.21)	2.08 (1.44)

Note. The ratings indicate interest to invest in the focal company (0="not at all interested"... 6="extremely interested"). The numbers in parentheses are standard deviations.

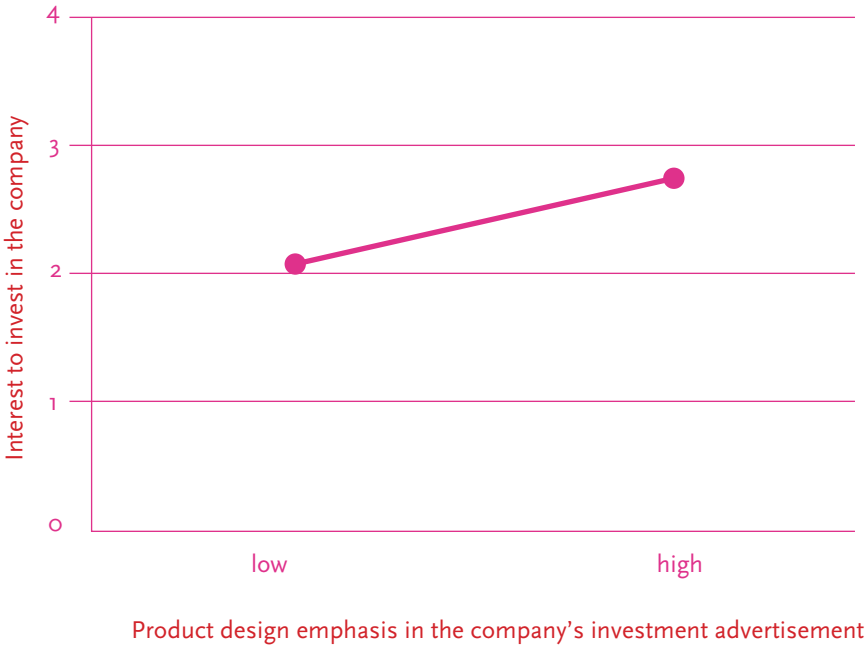


Figure 11.
(Least-squares) mean interest to invest in the company (Study 2)

The analysis revealed a significant main effect of 'product design emphasis in company investment ad' ($F(1, 164) = 6.28$, $p = .013$), with subjects in the high condition having higher INTEREST TO INVEST in the company ($M_{hiPDemph} = 2.77$) than those in the low condition ($M_{lowPDemph} = 2.10$; $p = .013$). Figure 11 presents the least-squares means for the two groups, respectively (with the different conditions of 'company/product type' collapsed). The results indicate strong support for hypothesis H14: Product design emphasis in a company's investment advertisement had positive effect on investor's general willingness to invest in the company's stock.

When it comes to 'company/product type', the analysis revealed a significant main effect, as well ($F(3, 164) = 5.05$, $p = .002$). Pairwise comparisons showed that especially when the company's product type was service, subjects had lower INTEREST TO INVEST in the company ($M_{service} = 1.61$) than in the rest of the conditions ($M_{high\text{-}tech} = 3.05$; $M_{medical} = 2.76$; $M_{everyday} = 2.33$; $p < .05$ for comparisons $M_{service}$ vs. $M_{high\text{-}tech}$ and $M_{service}$ vs. $M_{medical}$). INTEREST TO INVEST of subjects in the other (latter) product type conditions did not differ significantly from each other.

With regard to the interaction of the experimental factors, the analysis found *no* significant two-way interaction between 'product design emphasis in company investment ad' and 'company/product type' ($F(3, 164) = .62$, $p > .5$). In other words, the effect of product design emphasis in a company's investment ad on investors' interest to invest in the company's stock did not differ significantly by company/product type. This finding gives us confidence in the generalizability of the found effects.

ADDITIONAL ANALYSES WITH COVARIATES. Originally, hypothesis H14 was posed as a corollary to the other (main) hypotheses of the overall dissertation. The presumption was that high product design emphasis in a company's investment advertisement would make it more salient to the investor how he might use investment in the company as a "vehicle" for expressing the personal relevance of the company's product domain to him as well as his overall affect with the company's product design. By and large, high

product design emphasis in a company's investment advertisement should, therefore, have positive effect on one's interest to invest in the company – which (main) effect was also confirmed above.

On the other hand, what is said above also means that controlling for the impacts of PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN and OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN – as measured *subjectively* at the time of investment – on an individual's INTEREST TO INVEST should *attenuate* the main effect of 'product design emphasis in company investment ad' on INTEREST TO INVEST. Even the main effect of 'company/product type' on INTEREST TO INVEST should be attenuated insofar as the original main effect by this variable was actually due to the fact that the mean values of the particular two variables differed among investors across the firms. Thus, a relevant additional analysis is to include PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN and OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN as control variables – covariates – into the earlier 2 ('product design emphasis in company investment ad') X 4 ('company/product type') ANOVA. Such analysis would be, in effect, analysis of covariance (ANCOVA)[32].

As anticipated (and reported below), the effects of 'product design emphasis in company investment ad' and 'company/product type' on INTEREST TO INVEST in the company were indeed substantially attenuated

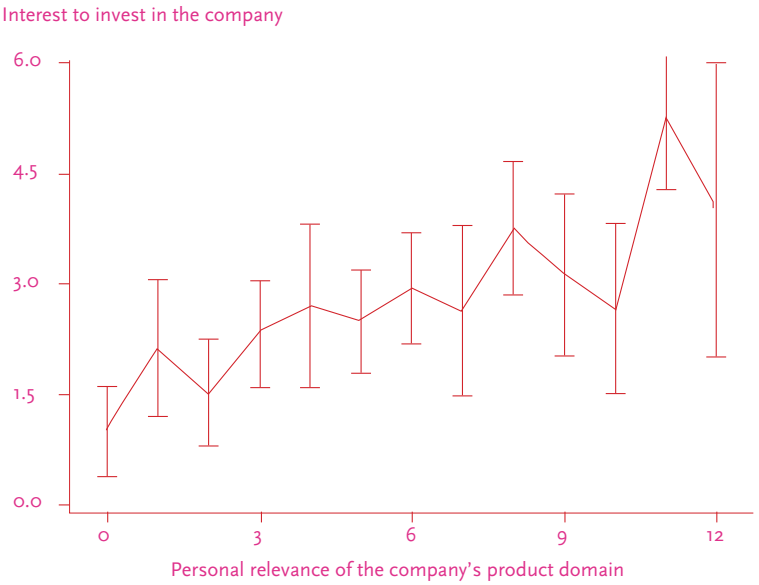
[32] Before proceeding with the ANCOVA, I checked whether there were significant interaction terms between the covariates and the experimental factors of the model ('product design emphasis in company investment ad' and 'company/product type') (see Huitema, 1980). This is called the test of homogeneity among slopes. The occurrence of significant interaction terms would mean that the effect of the factor(s) would depend on the exact value of the covariate variable – and would make the results difficult to interpret and, in fact, ANCOVA inappropriate to use. Thus, in order to test for the interactions between the covariates and the factors, I included each of the covariates separately as a covariate in the standard ANOVA model for 'product design emphasis in company investment ad' and 'company/product type'. None of these analysis, however, indicated a significant interaction between the covariates and the factors. Thus, the normal ANCOVA was appropriate to use, and the covariates were all included into a final 2 X 4 ANCOVA, without the interaction terms (see Huitema, 1980).

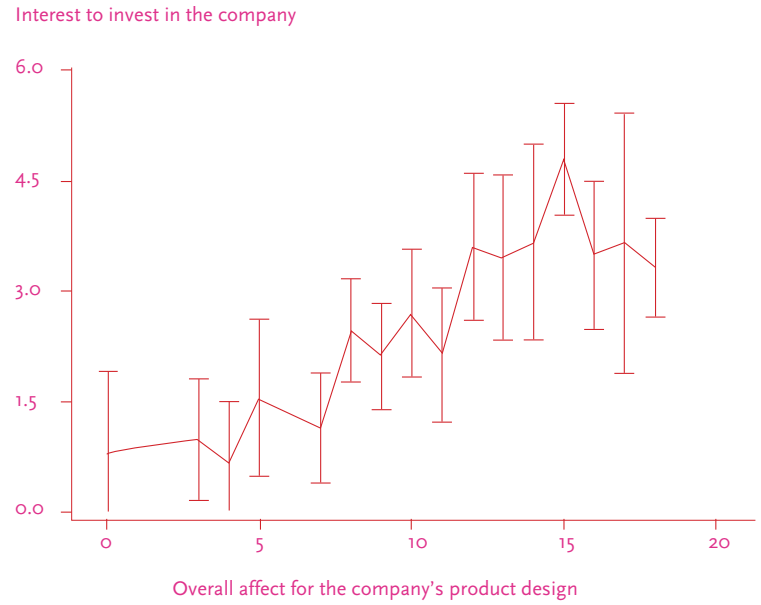
when PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN and OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN were included as covariates in the ANCOVA. I also included FAMILIARITY WITH THE COMPANY as a covariate, so as to control that any found effects would not be due to mere differences in investors' familiarity with the companies (cf. Frieder & Subrahmanyam, 2005).

In the ANCOVA, both PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN ($F(1, 150) = 7.55$; $p = .007$) and OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN ($F(1, 150) = 14.99$; $p = .0002$) were revealed to be highly significant covariates for INTEREST TO INVEST. This suggests that the individual- level differences in PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN and OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN explain investors' INTEREST TO INVEST in particular companies to a substantial extent. In other words, both the personal relevance that an investor attaches (at individual level) to a company's product domain and investor's overall affect for the company's product design have positive effects on his interest to invest in the company. Moreover, the effects are independent, since both the covariates achieved significance[33]. As a further illustration of these effects, I present the observed means (and standard deviations) for INTEREST TO INVEST at different levels of the covariates in Figure 12. There is a clearly upward trend in investment interest with increasing level of PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN (upper panel) and OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN (lower panel). All in all, the findings give further support especially to hypotheses H6-H7 and H9-H10 of this dissertation.

Furthermore, as the covariates were included in the ANCOVA, the previously reported effect of 'company/product type' on INTEREST TO INVEST

[33] Multicollinearity should not be a concern here, since the correlation between the two covariates was under .5.





Note. The height of the "bars" are equal to double the standard deviation of observations.

Figure 12.
Observed means and standard deviations for interest to invest, at different levels of the main covariates (personal relevance of the company's product domain and overall affect for the company's product design) of Study 2

($F(3, 164) = 5.05$, $p = .002$) became non-significant ($F(3, 150) = 1.49$; $p = .22$). Importantly, this suggests that the type of the company or its products does *not*, per se, explain investors' interest to invest in particular companies insofar as we account for investors' differential (average) PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN AND OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN per company. In other words, to the extent that investors' overall investment interest differs by company or company's product type, this seems to be due to the fact that the personal relevance that investors, on average, attach to those companies' product domains and/or investors' average affect for those companies' product design differ.

When it comes to the other experimental factor – 'product design emphasis in company investment ad' – the previously reported effect for INVESTMENT INTEREST ($F(1, 164) = 6.28$, $p = .013$) was substantially attenuated due to the covariates, as well, yet remained significant ($F(1, 150) = 4.20$, $p = .042$). This finding suggests while much of the effect of 'product design emphasis in company investment ad' on INTEREST TO INVEST can be explained by the eventual levels of PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN and OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN at the time of the investment decision[34], the 'product design emphasis in company investment ad', *per se,* still has some direct main effect on INTEREST

[34] As a matter of fact, I also analyzed whether 'product design emphasis in company investment ad' had some effect on the covariates personal relevance of the company's product domain and overall affect for the company's product design. An ANOVA with personal relevance of the company's product domain as the dependent variable revealed no significant effect by 'product design emphasis in company's investment ad' ($F(1, 170) = 1.53$, $p > .2$). This suggests that the personal relevance that an investor attaches to the broader domain that the company's products represent is unaffected by product design emphasis in a single company (investment) advertisement. An ANOVA with overall affect for the company's product design as the dependent variable, in contrast, did reveal a significant effect by 'product design emphasis in company investment ad' ($F(1, 161) = 6.44$, $p = .012$), with investors in the high product design emphasis condition having higher affect for the companies' product design ($M_{hiPDemph} = 10.11$) than those in the low condition ($M_{lowPDemp} = 8.57$; $p = .012$). This result suggests that an investor's affect for the company's product design may, actually, be enhanced by high product design appeal in the firm's investment advertisement.

TO INVEST. One more analysis concerning this issue is performed in the section below.

Note, finally, that FAMILIARITY WITH THE COMPANY did not achieve significance in the ANCOVA ($F(1, 150) = .23$, $p = .63$). This confirms the prediction that *neither* the effect of 'product design emphasis in the company's investment ad' *nor* the positive effects of PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN or OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN on INTEREST TO INVEST can be explained by mere differences in investors' familiarity with the companies (cf. Frieder & Subrahmanyam, 2005)[35].

ANALYSIS OF OPTIMISM AS AN ADDITIONAL COVARIATE. The fact that the main effect of 'product design emphasis in company investment ad' remained significant in the above analysis might be partly due to a phenomenon whereby high product design emphasis in a company's investment ad has direct effect on investor's optimism about the financial returns of the company (corresponding to the expectation of hypothesis H11)[36]. I examined also this possibility by analyzing, first, whether 'product design emphasis in company investment ad' had effect on investors' optimism and, second, whether including optimism in the earlier ANCOVA would further attenuate the effect of 'product design emphasis in company investment ad' on INTEREST TO INVEST.

In the first stage of this analysis, a one-way ANOVA with 'product design emphasis in company investment ad' as the independent variable and OPTIMISM ABOUT THE COMPANY'S FINANCIAL RETURNS as the dependent

[35] The non-significance of FAMILIARITY WITH THE COMPANY should not be due to multicollinearity (correlation with the other covariates), either, since the correlations between FAMILIARITY WITH THE COMPANY and the two other covariates were under .5.

[36] optimism about the company's financial returns was measured in the questionnaire of Study 2 by asking the subject: "If you were considering to invest in the firm at the moment, what would be your "hunch" about the attractiveness of the firm's business in terms of long-term investment returns?". The responses were recorded on a 7-point scale, anchored by 0="highly unattractive" and 6 ="highly attractive".

variable revealed, indeed, a significant main effect ($F(1, 168) = 10.48$, $p < .01$). Specifically, investors in the high condition of 'product design emphasis in company investment ad' had higher optimism about the company's financial returns ($M_{hiPDemph} = 3.26$) than those in the low condition ($M_{lowPDemph} = 2.59$; $p < .01$).

In the second stage of the analysis, I included optimism as an additional covariate to the ANCOVA with the experimental factor 'product design emphasis in company investment ad' (high, low) and dependent variable INTEREST TO INVEST. Also the earlier covariates were included: PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN, OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN, and FAMILIARITY WITH THE COMPANY.

As suspected, OPTIMISM ABOUT THE COMPANY'S FINANCIAL RETURNS resulted to be a significant covariate in the ANCOVA ($F(1, 155) = 26.80$, $p < .0001$), and substantially reduced the observed effect of 'product design emphasis in company investment ad' ($F(1, 155) = 2.80$, $p = .096$) on INTEREST TO INVEST – as compared to the ANCOVA without optimism as covariate ($F(1, 156) = 6.21$, $p = .014$). When it comes to the other (main) covariates, the effect of OVERALL AFFECT FOR THE COMPANY'S PRODUCT DESIGN was substantially reduced, as well, albeit remained significant (from $F(1, 156) = 20.20$, $p < .001$ down to $F(1, 155) = 6.17$, $p = .014$). Likewise, the effect of PERSONAL RELEVANCE OF THE COMPANY'S PRODUCT DOMAIN was reduced, yet remained significant (from $F(1, 156) = 10.19$, $p = .002$ to $F(1, 155) = 3.93$, $p = .049$), when optimism was included.

All in all, these additional analyses suggest, on one hand, that product design emphasis in company's investment advertisement has direct effect on investor's optimism about the financial returns of the company. On the other hand, the analyses suggest that optimism about a company's financial returns partly (but not fully) mediates the effects of the personal relevance of the company's product domain and overall affect for the company's product design on investors' interest to invest in the company. This is consistent with the hypothesized paths (H11, and H6-H7 and H9-H10), as well as the results of the Studies 1a (concerning H11) and 1b (concerning H6-H7, H9-H10). A summary of all the hypotheses of the dissertation and the support they received from Studies 1a/1b and 2 is provided in Table 12.

Table 12.
Summary of the hypotheses of the dissertation and the support they received in Studies 1a/1b and 2.

Hypothesis	*Alternative hypothesis (if available)*	*Results*
H0: An investor's familiarity with a company has positive effect on his determination to invest in that company's stock rather than other companies' stocks (that have approximately similar expected financial returns/risks).		**H0: Positive effect supported** (Study 1b)
H1: The personal relevance that an investor attaches to a certain life domain has positive effect on his familiarity with products that are perceived to represent or support the domain.		H1: **Positive effect supported** (Study 1a; Study 1b)
H2: An investor's familiarity with a particular company's products has positive effect on his familiarity with the company.		H2: **Positive effect supported** (Study 1b)
H3.0: An investor's familiarity with a particular company's products has negative effect on the consideration that he gives to other companies as alternative investment targets.	***H3.1***: An investor's familiarity with a particular company's products has positive effect on the consideration that he gives to other companies as alternative investment targets.	H3.1: **Positive effect supported** (Study 1a) H3.0: Negative effect not supported (Study 1a)
H4.0a: An investor's familiarity with a particular company's products has positive effect on the confidence that he has in his own expectations about the financial returns from the company's stock.	***H4.1a***: An investor's familiarity with a particular company's products has negative effect on the confidence that he has in his own expectations about the financial returns from the company's stock.	H4.0a: Positive effect not supported (Study 1a) H4.1a: Negative effect not supported (Study 1a)
H4.0b: The confidence that an individual has in his own expectations about the financial returns from a particular company's stock has negative effect on the consideration that he gives to other companies as alternative investment targets.		H4.0b: **Negative effect supported** (Study 1a)
H5: The personal relevance that an investor attaches to a certain life domain that a particular company is perceived to represent with its products has negative effect on the consideration that he gives to other companies as alternative investment targets.		H5: **Negative effect supported** (Study 1a)
H6: The personal relevance that an investor attaches to a certain life domain that a particular company is perceived to represent with its products has positive effect on his determination to invest in that company's stock rather than other companies' stocks which have approximately similar expected financial returns/risks.		H6: **Positive indirect effect supported**, through 'willingness to support the company' (Study 1b) H6: **Positive direct effect marginally supported** (Study 1b) H6: **Positive effect supported** (Study 2, covariate effect)

Hypothesis	*Alternative hypothesis (if available)*	*Results*
H7: The personal relevance that an investor attaches to a certain life domain that a particular company is perceived to represent with its products has positive effect on his preparedness to invest in that company's stock even with lower financial returns expected from the stock than from other companies' stocks.		**H7: Positive indirect effect supported**, through 'willingness to support the company '(Study 1b) ***H7***: Positive direct effect not supported (Study 1b)
H8: An investor's positive overall affect for a particular company's product design has negative effect on the consideration that he gives to other companies as alternative investment targets.		H8: **Negative effect marginally supported** (Study 1a)
H9: An investor's positive overall affect for a particular company's product design has positive effect on his determination to invest in that company's stock rather than other companies' stocks which have approximately similar expected financial returns/risks.		H9: **Positive indirect effect supported**, through 'willingness to support the company' (Study 1b) H9: **Positive direct effect supported** (Study 1b) H9: **Positive effect supported** (Study 2, covariate effect)
***H10*: An investor's positive overall affect for a particular company's product design has positive effect on his preparedness to invest in that company's stock with lower financial returns expected from the stock than from other stocks.		H10: **Positive indirect effect supported**, through 'willingness to support the company' (Study 1b) H10: Positive direct effect not supported (Study 1b)
H11: An investor's positive overall affect for a particular company's product design has positive effect on the optimism in his expectations about the financial returns from the company's stock.		H11: **Positive effect supported** (Study 1a) H11: **Positive effect supported** (Study 2, covariate effect)
H12: An investor's positive overall affect for a particular company's product design has positive effect on the confidence he has in his own expectations about the financial returns from the company's stock.		H12: Positive effect not supported (Study 1a)
H13: The personal relevance that an investor attaches to a certain life domain has positive effect on his overall affect for the product design of a company whose products are perceived to represent the domain.		H13: **Positive effect supported** (Study 1a; Study 1b)
***H14*:** Product design emphasis in a company's investment advertisement has positive effect on investor's general interest to invest in the company's stock.		H14: **Positive effect supported** (Study 2, experimental effect)

7
Discussion

7.1
CONTRIBUTIONS TO RESEARCH

While design management research has marginally referred to the relation between investors and a company's product design or product design strategy (e.g., Borja de Mozota, 2003; 2006; Hargadon, 2005), it has lacked closer psychological and behavioral examinations of the mechanisms by which a company's product design actually attracts investors. The present dissertation contributes to the understanding of these mechanisms by explicating the theory as well as providing empirical evidence of how individual investors' subjective perceptions and evaluations of companies' product design influence their decisions to invest in companies' stocks.

The present research identifies two important, product design -related factors that influence investors' investment behavior and decisions concerning companies' stocks. The first factor is (1) the personal relevance or importance that an investor attaches to "life domains" represented by a company's products. The life domains can be heterogeneous activities or areas of interests (e.g., motoring/car-driving, gardening, sport, optics) – but also more abstract themes or ideas (e.g., healthcare, eye vision, mobility, social responsibility). The second factor, in turn, is (2) the investor's overall affect or liking for a company's product design. This factor reflects the degree to which the investor perceives the company's products to be pleasant, attractive, good, and likeable overall.

At the general level, the identification and evidence of these factors adds an important dimension to design management literature's notion about *strategic relevance of the marketplace distinction achievable through designed artifacts* (see section 2.1.1). In earlier design management research, the goodness and effectiveness of a company's product design – implicating the fact that the company's product artifacts are subjectively appealing to users/consumers – have mostly been assumed to influence people*'s willingness to use and buy those products*, and this way create strategic distinction, differentiation, and competitive advantage for the company (e.g., Borja de Mozota,

2002; Hertenstein & Platt, 1997; Kotler & Rath, 1984; Olson, Cooper, & Slater, 1998; Phatak & Chandron, 1989). The important dimension added by the present research is that the aforementioned product design -related factors also influence people's or individual *investors' willingness to invest in the company*. In other words, the present research identifies and finds evidence of an additional way through which products and product design may create important strategic, marketplace distinction for the company – i.e., in the stock market.

In effect, the findings imply that designing pleasurable products (e.g., Jordan, 2002) – by being empathic about and addressing the personal meanings and emotions that people attach to products (Battarbee, 2004; Battarbee & Koskinen, 2005; Clark, Smith, & Yamazaki, 2006; Koskinen, Battarbee, & Mattelmäki, 2003; Normann & Ramírez, 1993; Verganti, 2003) – may not only create strategic distinction and competitive advantage for the company in the product markets, but also in the financial, or stock markets. At the same time, the findings also provide novel explanations and evidence to behavioral finance research, particularly with respect to how people's product design evaluations may "spill over" to their investment decisions. All in all, the contributions of the dissertation to the fields of design management as well as behavioral finance are summarized in Table 13 (p. 150-151) and further discussed below.

7.1.1
PRODUCT DESIGN AND INVESTORS' NEEDS

Especially, the present results can be considered to explicate the specific ways in which a company's product design can "address investors' needs" – something that earlier design management research has only marginally touched on (cf. Hargadon, 2005). Indeed, the study implies two broad types of investor needs which a company's product design may address: (A) financial needs and (B) self-expressive/emotional needs that go beyond the financial needs. Based on the results, the (1) personal relevance or importance

that an investor attaches to "life domains" represented by a company's products and the (2) investor's overall affect or liking for a company's product design may influence the investors' pursuit towards satisfying both needs. In effect, the results elucidate the suggestion – made tentatively by Borja de Mozota (2003, p. 17) – that a company's products and product design determine much of a company's identity for not only its customers but also its investors.

INVESTORS' FINANCIAL NEEDS. First of all, the present results point out the role of personally relevant life domains in contributing to an investor's special *familiarity* with products that represent those domains – and, further, with companies that design and produce such products. Familiarity, in turn, is important in regards to the financial needs since investors need to learn and acquire information about companies and their attractiveness in terms of investing (prospective/expected financial returns). Specifically – as earlier behavioral finance research (Barber & Odean, 2008; Odean, 1999) notes – an investor cannot (or is highly unlikely) to invest in a company with which he is totally unfamiliar or which has not grabbed his attention. Moreover, the level of familiarity with a company is also likely to have direct influence on one's investment willingness, as found by the present and earlier studies (e.g., Ackert & Church, 2009; Coval & Moskowitz, 1999; Frieder & Subrahmanyam, 2005; Grinblatt & Keloharju, 2000; Grullon, Kanatas, & Weston, 2004; Huberman, 2001; Merton, 1987; Ortmann, Gigerenzer, Borges, & Goldstein, 2008).

Indeed, with respect to the familiarity literature, the present findings point out that a company is likely to find potential investors that are most familiar with the kind of products the company produces – and often readily even with the company itself – from among investors who find the life domains that the company's products represent personally relevant. Such people are by default, the results indicate, more likely to be willing to invest in the company than others. This is something that neither design management nor behavioral finance research has recognized before. For instance,

an investor who considers motoring/car-driving to be a personally relevant domain is likely to be(come) familiar with companies whose products support or represent that domain (such as car companies, tire companies, road construction companies, fuel companies etc.) – and, thereby, develop heightened interest to invest in such companies due to the very familiarity.

Yet, the findings of the present research also underline that the effects of product perceptions on investment decisions are not due to mere familiarity effects (cf. Frieder & Subrahmanyam, 2005). Concerning investors' financial needs, the present results show especially that an investor's overall affect – or liking – for a company's product design (A) has influence on the investor's expectations of the financial returns of a company's stock, as well as (B) cause (heuristic) determination to invest in a stock over alternatives that have approximately similar expected financial returns.

Specifically, the results suggest (A) that one's liking for a company's product design (in the form of affective evaluation of the design) has direct positive effect on one's optimism concerning the company's financial returns when the company is considered as an investment target. This effect makes one's liking for a company's product design logically a factor that increases an investor's investment willingness. The finding is consistent with the recent notion of behavioral finance that one's overall affect for a company will correlate with one's perceptions of the financial prospects of a company (MacGregor et al. 2000; Statman, Fisher, & Anginer, 2008; Aspara & Tikkanen, 2008, forthcoming) – and that individual investors often presume that "good companies"[37] are good investment targets as well (e.g., De Bondt, 1998; Shefrin, 2001, 2002; van der Sar, 2004; Shefrin and Statman, 1995). Nevertheless, instead of dealing with good company reputation or affect for a company in general, the present finding constitutes new evidence of the correlation between one's affect for a company's products, in particular, and

[37] good in terms of good overall corporate reputation, good current financial standing/soundness, or good management team

one's perceptions of the financial prospects of a company. In other words, we have new evidence of the fact that investors tend to perceive that companies with "good products/design", especially, are good investment targets – not just companies with generally good reputation (cf. De Bondt, 1998; Shefrin, 2001, 2002; Shefrin and Statman, 1995; Statman, Fisher, & Anginer, 2008).

Moreover, my findings add to the literature positing that (B) investors may use affect for a company as a heuristic – i.e., affect heuristic (Slovic et al. 2002a, 2002b, 2007; Finucane et al., 2000; Aspara & Tikkanen, forthcoming) – in order to reach an investment decision over alternative stocks that appear to have approximately similar expected financial returns. Yet, my findings constitute, here again, new evidence of the heuristic-like role of an investor's affect for a company's product design, in particular – beyond the role of one's affect for the company in general.

The strategic implication of these findings is that a given company is likely to find investors with special attraction – optimism and investment heuristic – directed towards the company among such investors who have strong overall liking for the company's products and product design. Since such people have increased interest to invest in the company, the company may strategically benefit from presenting itself as an investment target to them, in particular.

Note, by the way, that from an investor protection perspective, it might present a problem if an investor's affect or liking for a company's product design caused excessive (over)optimism about the company as an investment target. While the present study cannot definitely overrule this possibility, it must be emphasized that the present results pertain to optimism as opposed to pessimism rather than to (over)optimism as opposed to a certain "right" level of financial expectations. In other words, the present results should not be interpreted to indicate that an investor's liking for a company's product design automatically leads to harmful levels of optimism (albeit it does generate some optimism). Rather, we should remember that some optimism (as opposed to pessimism) is often, or always, needed for an

investor to make a particular investment (cf. Branzei & Zietsma, 2003) – the investors' positive affect towards or liking for a company's product design may contribute such needed optimism. Notably, what also speaks against the interpretation that an investor's affect for a company's product design would automatically lead to overly biased financial expectations is the finding that an investor's liking for a company's product design did not increase investor's (over)confidence about his assessments about the company's financial returns. Relatedly, recall also that familiarity with a company's products was found to actually increase the degree to which the investor also considered investment targets alternative to that company.

Investors' self-expressive/emotional needs. Besides the above (A) financial needs, the results of the present dissertation also provide new insights to investors' (B) self-expressive and emotional needs – and how investors' evaluations of companies' product design can address those needs. In brief, investors seem to have not only financial needs but also self-expressive and emotional needs which they seek to satisfy with investments – and companies' product design will potentially address those needs, too.

Specifically, my finding was that both the design-related factors – personal relevance that an investor attaches to life domains represented by the company' products as well as an investor's overall affect or liking for a company's product design – have, first of all, positive effect on (i) the investor's willingness to invest in the company's stock rather than in other stocks that have approximately similar expected financial returns/risks. Secondly, these factors were found to even elicit (ii) preparedness to invest in the company's stock with lower financial returns expected from the stock than from others, at a given risk level.

Notably, these effects were found to be partially channeled via an investor's *willingness to support such a company by investing*, whose product domain the investor finds personally relevant and for whose product design the investor has overall affect or liking. This was an expected result on the basis of social psychological theories on identification and self-expression

(Aspara et al., 2008; Bhattacharya & Sen, 2003; Scott & Lane, 2000). For example, an investor who finds gardening as a personally relevant domain will have willingness to support that domain by investing in a company whose products represent gardening (such as a company designing garden tools). With respect to overall affect for the company's product design, the findings even hint that in addition to the aforementioned reliance on affect heuristic to decide and investment in favor of a company with "good products/design", investors may have *collection or possession motives* to invest in companies of good design. This is consistent with psychological literature that points out the close relationship between one's affection for things, on one hand, and will to collect or possess them, on the other (see e.g., Danet & Katriel, 1989; Pearce, 1994). For instance, for an investor that really likes Apple's product design, investment in Apple Corporation can be partially motivated by a motive to get that company's design, in a way, into one's "collection" or "possession"– by way of owning the stock of the company behind the design.

The results essentially support the point that has been marginally mentioned in behavioral finance research: that most investors have preferences that go beyond expected financial returns and risk (Fisher & Statman, 1997; Hoffmann, von Eije, & Jager, 2006). Specifically, the findings constitute tangible support for the earlier speculation that individuals may obtain emotional or experiential utility (Beal, Goyen, & Phillips, 2005; Cullis, Lewis, & Winnett, 1992; Fama & French, 2004, 2007) and self-expressive benefits (Statman, 2004) from investing in and owning companies' stocks. In other words, investors may seek to satisfy self-expressive or emotional needs in and through making investments, besides financial needs. While earlier behavioral finance research has implied that satisfaction of an investor's self-expressive needs (besides financial) may occur in socially responsible, ethical, or green investing (e.g., Beal, Goyen, & Phillips, 2005; Cullis, Lewis, & Winnett, 1992; Getzner & Grabner-Kräuter, 2004) and sometimes in home-country investing (Statman, 2004), present research makes an extension by demonstrating that *no* connection to responsibility, ethical, or

green issues (or home-country) is needed. Indeed, investors seem to pursue satisfaction of self-expressive and emotional needs – and obtain self-expressive and emotional benefits/utility – just by investing in companies whose product domains they find personally relevant or valuable and/or whose product design they like overall.

To recap, the novelty of these findings concerning investors' self-expressive motives – and interestingness for design management – is in that they point out the potential that a company has, in its product design, to address investors' self-expressive and emotional needs (besides the financial ones). Indeed, the findings imply that the degree to which an investor attaches personal relevance to life domains represented by the company's products and the degree of the investor's overall affect for a company's product design are major determinants of the degree to which the company can address the investor's self-expressive/emotional needs. From a company's strategic perspective, this means that a company is likely to find investors who are especially attracted to invest in the company from among people who have positive (or most positive) overall liking for the company's product design and/or who find the life domains that the company's products represent personally important. These people may, according to the results, even be prepared to give up on some financial return requirements so as to invest in the company's stock. Thus, we have here also new evidence of the fact that investors' motivation to invest in companies that have good and personally relevant products/product design can be another "profits-with-principles" investment motivation – i.e., investors' caring not only about *how much* money is made but also about *how* it is made (cf. Jackson & Nelson, 2004; Nelson, 2005; Nilsson, 2008; Schueth, 2003; Getzner & Grabner-Kräuter, 2004).

7.1.2 Investors and "product design" – in what sense?

Along with the contributions discussed above, the results of the present studies also enable participation in the ever-ongoing debate (see e.g., Love, 2001; Valtonen, 2007) concerning "what design is" – especially when it comes to product design and investors.

First of all, the results discussed above essentially reveal how the potential personal relevance of a company's product domain to an investor, as well as an investor's overall affect for the company's product design, influence the investor's investment willingness in the company – both regarding financial considerations and beyond. Now, exactly by making this revelation, the results can be considered to provide an extensive answer to the question why and how a company's products – as embodying certain kind of product design – do matter to investors, in the broad and general sense.

A slightly different question is, nevertheless: What will investors *themselves* (subjectively) understand or mean by the *term* "product design"? Notably, this interpretivist question was not a central question under examination in the present dissertation. Yet, some answers can be outlined to this question as well.

To start with, based on the results of the present studies, it seems that investors do not much differentiate between an *overall impression of the company's* **products** versus *an overall impression of the company's* **product design**. This shows especially in the high correlations between investors' evaluations of the "goodness/attractiveness of a company's products" and "goodness/attractiveness of the company's product design". Thus, investors' thinking and behavior seem to reflect the idea that since a company's (end) products essentially and inevitably embody its product design(s), there isn't (or cannot be) much difference between one's impression of the company's products and one's impression of its product design. Moreover, since investors' evaluations of companies' products in the senses of "(good) functionality/usability", "good design", "good design relative to competitors", and (general) "goodness", "attractiveness", and "pleasantness" correlated highly,

it seems that investors' idea of "good design" is corresponding to quite a *global evaluation of the company's products* – i.e., the products being good in many interrelated senses (or as a gestalt). This also suggests that investors' idea of "good design" seems *not* to be limited merely to the aesthetic or visual aspects of the products, for example.

However, a few words of caution are needed, with respect to the above. Notably, the correlation of investors' evaluations in the above senses ("functionality/usability", "goodness", "goodness of design", "attractiveness" etc.) in the present studies might be due to an incidental fact that the Finnish companies included in the studies just happen to perform well on all the corresponding dimensions. In other words, "product design" may not equal (or mean exactly the same as) "products" or "product functionality" or "product quality" in investors' minds – not even though investors' *evaluations of* these aspects correlated highly. Also, it must be noted that the words corresponding to "(good) design" have slightly different connotations in different languages. So, the correlations between investors' evaluations of different dimensions of "good design" might actually be different in English than they were in the present data that involved Finnish ("hyvää muotoilua"). Moreover, it is also possible that an investor's impression of a company's products/design being good is influenced by the products' presumed past or current commercial success and profitability (in addition to the inverse direction of influence that was proposed presently). Finally, note that examination of investors' perceptions of companies' design *capabilities, practices, or processes* was not within the scope of this dissertation. So, the results do not allow us to make detailed conclusions about the extent to which investors view "(good) design" to be about "(good) product design capabilities, processes, and practices" in contrast to mere "(good) end products" discussed above.

In any case, regardless of these words of caution, note that it is, after all, *not* an absolutely crucial question what investors' exactly mean or understand by the word "(good) design" – insofar as we can make *predictions* about their investment behavior by asking them to evaluate company's products

Table 13.
Research contributions of the dissertation

Research field	*The present research contributes to/extends the research on ...*	*...by*
Design management (DM)	• strategic/marketplace distinction that can be achieved through designed artifacts (= general DM research theme, see section 2.1.1) • strategic benefits of (designing) pleasurable products to which people can attach personal meanings and emotions (e.g., Battarbee, 2004; Battarbee & Koskinen, 2005; Clark, Smith, & Yamazaki, 2006; Koskinen, Battarbee, & Mattelmäki, 2003; Normann & Ramírez, 1993; Verganti, 2003)	• showing that product design -related factors influence people's or individual investors' willingness to invest in the company – i.e., product design may not only create strategic distinction and competitive advantage for the company in the product markets, but also in the stock markets.

	• product design as addressing investors' needs (among those of other stakeholders) (cf. Hargadon, 2005)	• identifying two broad types of investor needs which product design -related factors may address, i.e., (A) financial needs and (B) self-expressive/emotional needs
		• identifying two product design -factors that influence investors' pursuit for satisfying both needs – i.e.:
		1. personal relevance or importance that an investor attaches to "life domains" represented by a company's products
		2. investor's overall affect or liking for a company's product design
		• showing how the two product -design factors (1 and 2) influence
		  • (A. financial needs:) optimism and confidence about the company's financial returns; familiarity with the company; consideration of alternative stocks
		  • (B. self-expressive/emotional needs:) (i) determination to invest in the company in case another company has appr. similar expected financial returns; (ii) preparedness to invest in the company even if it offers somewhat lower financial returns than another stock
		• explicating the role of an investor's familiarity with a company's products and with the company itself
		• showing how product design emphasis (with personal appeal) in companies' investment advertisements will increase investors' interest to invest in the companies

Research field	*The present research contributes to/extends the research on ...*	*...by*
Behavioral finance	• how product (market) evaluations may spill over to and affect investors' investment decisions (Frieder & Subrahmanyam, 2005)	• identifying and providing empirical evidence on the aforementioned effects of product design -related factors on investment decisions (*see 1, 2, A and B above)* • explicating and providing empirical evidence that the found effects are not merely due to familiarity effects

	• how company-related affect may influence an investor's investment decisions (e.g., Finucane et al., 2000; MacGregor et al., 2000; Slovic et al., 2002a, 2002b, 2007; Statman, Fisher, & Anginer, 2008)	• identifying and providing empirical evidence on how affect for a company's *product design*, especially, can influence investment decisions
		  • (A.) optimism and confidence about the company's financial returns; familiarity with the company; consideration of alternative stocks
		  • (B.) (i) determination to invest in the company in case another company has appr. similar expected financial returns; (ii) preparedness to invest in the company even if it offers somewhat lower financial returns than another stock
		• showing how product design emphasis (with personal appeal) in companies' investment advertisements will increase investors' interest to invest in the companies

	• investor preferences that go beyond expected financial returns and risk (e.g., Fisher & Statman, 1997; Hoffmann, von Eije, & Jager, 2006) • emotional or experiential utility (e.g., Beal, Goyen, & Phillips, 2005; Cullis, Lewis, & Winnett, 1992; Fama & French, 2007; Fama & French, 2004) and self-expressive benefits (Statman, 2004) that investors may obtain from stock investments	• identifying and providing empirical evidence the effects of product design -related factors 1 and 2 (*see above)* on • (B. self-expressive/emotional needs:) (i) determination to invest in the company in case another company has appr. similar expected financial returns; (ii) preparedness to invest in the company even if it offers somewhat lower financial returns than another stock • showing how product design emphasis (with personal appeal) in companies' investment ads will increase investors' interest to invest in the companies • demonstrating that *no* connection to responsibility, ethical, or green issues (or home-country) is needed for self-expressive/emotional investing: Investors can obtain self-expressive and emotional benefits/utility just by investing in companies whose product domains they find personally relevant or valuable and/or whose product design they like overall.

and "product design" (regardless of what this exactly means to them). And this prediction was what we could, in effect, do in the present studies.

Finally, one should not forget, either, the other product design –related factor which was studied (besides overall product design affect/evaluation) – and which was found to influence investment willingness. That is, the personal relevance of the life domain(s) that the company's products represent or support. Now, the extent to which a company's products support or represent personally relevant life domains may not be readily part of investors' own conception of what "(good) product design" means, but it is surely determined by the company's product design – and it influenced investors' (subjective) evaluations of the companies' product design and positively influenced their investment decisions.

In fact, investors' preference to invest in companies whose products support or represent (life) domains that are personally relevant to them could be understood as their "advocacy" or "nurturance" (Bloch & Richins, 1983) of such domains and, thereby, of companies that design products supporting such domains. To further illustrate, consider that investment that is made in company Y with the partial motivation to nurture (or, maintain, enhance, advocate, or patronize) a personally relevant life domain – due to the company's product design supporting that domain – has actually the following parallels:

- voting for a person or party, in elections, that supports a personally relevant domain (e.g., health care; architecture)
- joining or volunteering in a community that supports a personally relevant domain (e.g., a certain sport; environment-protection)
- seeking a job or career where one can cherish a personally relevant domain (e.g., education; chemistry)
- donating one's money or time to an organization that represents a personally relevant domain (e.g., art; health care)
- cherishing the environments essential to a personally relevant domain (e.g., forests; forest hunting)

- buying and using products that support or represent a personally relevant domain (e.g., a sport; cooking)

Thus, investing in a company that designs and produces such products that support or represent a certain, personally relevant life domain becomes, in one sense, just an additional or alternative way (to the ones above) to engage in life- domain/product-design nurturance, advocacy, or patronage. Indeed, one can nurture, advocate, and patronize, for example, health care by investing in a diagnostics product company; architecture by investing in a construction company; sports by investing in sports equipment company; environment-protection by investing in solar energy systems company; education by investing in school book company; chemistry by investing in laboratory equipment company; art by investing in paint and brush company; hunting by investing in outdoors equipment company; and cooking by investing in pan & kettle company. In addition to such obvious examples, note that one can also nurture, advocate, and patronize e.g., healthcare by investing in a company that specializes on better-to-health, low-fat snack designs (even if snacks in general are not healthy); architecture by investing in a construction company that specializes on avant-garde architecture designs (even if construction companies in general represented mediocre architecture); environment-protection by investing in a company that specializes on hybrid car designs (even if cars in general were bad to environment); or sports by investing in a company that specializes on sporty mp3 player designs (even if mp3 players in general had nothing to do with sports).

All in all, then, what a company's product design might, in some cases, also mean to investors – in a profound sense – is the extent to which the company's products support or represent life domains that they find personally relevant, and which they can correspondingly support by way of investing in the company.

7.2
PRACTICAL IMPLICATIONS TO DESIGN MANAGEMENT

As mentioned, the theoretical development and empirical evidence of this dissertation contribute primarily to design management literature's notion about the strategic relevance of the marketplace distinction achievable through designed artifacts (cf. section 2.1.1), especially when it comes to strategic distinction and attraction that a firm's products and product design can create among investors (in the stock market). Nevertheless, the findings concerning this issue have direct implications – which are at the same time theoretical and practical – with respect to two other major themes of design management literature, as well: i.e., how to *coordinate various designs and coherent corporate identity* (cf. section 2.1.3) and how to *manage the processes and activities of designing* (cf. section 2.1.2) at the strategic level of a company's business. In other words, the results of the present research have important direct implications to companies' design and other managers and executives.

In general, the findings identify new important roles that design may play in companies' financial (or owner or shareholder or investor) relationships, as forecast by Borja de Mozota (2003, p. 113) in the design management context. Specifically, product design may, based on the results, play a role (1) in attracting investments from investors who are appealed by the company's product domains and product design, as well as (2) in defining "hybrid" strategies or business models that take, already at the outset, into account certain investors' special attraction to the company's current or future product design.

7.2.1
ATTRACTING INVESTMENTS FROM INVESTORS WHO ARE APPEALED BY THE COMPANY'S PRODUCT DESIGN

The general finding of the present dissertation – that investors will be attracted by product design -related factors – emphasizes and elucidates to managers that a company's products and product design are central in determining an (attractive) corporate identity not only for the company's customers but also for its investors (cf. Borja de Mozota, 2003, p. 17). Accordingly, the requirement to coordinate the corporate identity as well as design work within the company (cf. section 2.1.3) should be considered in new light – especially when it comes to the role of products and product design in *designing communications towards selected investors*.

First of all, any firm can take advantage of the tendency of the personal relevance of various areas of interest, activities, and ideas to elicit extra willingness – in investors – to invest in companies that represent those domains with their products. In other words, given a company that designs and produces certain (kinds of) products, it may be highly useful for the company – when attempting to promote itself as an investment target in the stock market – to target especially such investors who find the domains represented by the company's products as personally relevant.

Relevant domains may be identified by asking the question: "What activities, areas of interest, ideas, or ideals do our company's products support or represent?" For instance, if the company's products are tires, answers to this question might include, at least, "car-driving", "road traveling", and even "road safety". If the company specializes on winter tire designs, additional answers might be "winter driving" or even just "winter weathers" in general. Accordingly, the company can pursue investors who find these domains personally relevant and offer the company as an investment target to them – with communications designed to highlight the potential personal relevance of the domains. Or, if the company's products are specialized heart-related drugs, the answers to the question might include "healthcare", "fight against illnesses", and "well-being" generally – or "cardiovascular

performance" or even "cardiovascular exercise/sport" especially. And again, investors who find these domains personally relevant can be pursued with correspondingly designed communications.

Note that the investors targeted the above way need *not* recognize or be familiar with the company in advance. Thus, even a company that lacks an established brand or familiarity in the (stock) market can still utilize the above investor-targeting strategies – as long as its product design supports or represents certain domains. Note, however, also that the personal relevance of a domain actually increases the probability that the individuals will be familiar with the company's product category, particular products, or even the company itself (to the extent that they support or represent the domain). For instance, if an investor finds road traveling or safety as highly relevant domains personally, he is relatively likely to (have) come across and become familiar with companies designing and producing cars and tires.

Secondly, among investors who already *are* familiar with the company or its products, a company can target not only (1) those who find the company's product domain(s) as personally relevant, but additionally or alternatively also (2) those who have particularly positive overall affect – or liking – for the company's product design. Evidently, the two groups will often be overlapping in part, and the greatest investment interest is likely to be found among investors who *both* find the company's product domain as personally relevant *and* have strong overall liking for its product design. Nevertheless, it is useful to consider these issues separately, as well. Notably, there might not be so many people finding, for example, certain very mundane product categories – such as domestic utensils or newspapers – as highly relevant personally (in an identification sense). But still: many people may have strong affect or liking for particular companies' design within those categories (e.g., Fiskars, New York Times). In effect, the company can benefit from this kind of product design affect among potential investors rather independently of whether the product domains in question are personally relevant to those investors.

Considering both the investor group that potentially finds the company's

product domain(s) as personally relevant and the (partly overlapping) investor group that has overall liking for the company's product design, a useful way of promoting the company as an investment target will be to emphasize the company's product design in its communication and advertising towards the selected investors. Indeed, as the results of the present research (Study 2) expressly showed, a company is likely to be able to attract greater investment by emphasizing its product design in its ads targeted directly to potential investors. This being the case, it is also reasonable to involve the company's product designers (and product advertisement designers) in designing the company's investment ads and other communication towards investors. Namely, product designers have expertise in understanding and communicating products' appeal to people – an advantageous skill when the company wants to appeal to investors, as well, with its product design.

In sum, the present results indicate that such investors who find a company's product domain personally relevant and/or have particular affect for the company's product design have high potential as investor groups for the company: it is likely that the company can quite effectively attract investments from these investors. This finding can serve segmentation and targeting of selected investors when the company wants to attract new investments – in order to, e.g., raise capital for new investments, realize an initial public offering (IPO) or other stock issue, or just generally widen its shareholder base and enhance its market valuation. When it comes to communicating with the selected investors, the communication should logically be designed to address both financial and self-expressive needs of the investors. Coordination of design work and people – especially that of financial experts, product designers, and communication designers – is needed here, to generate communication that is as effective as possible and to reinforce a corporate image/identity that the investors perceive as coherent. In effect, the designed communication should attract investments through both reinforcing financial expectations concerning the company (optimism about and/or confidence in product sales, earnings, stock returns) and framing the investment in the company (explicitly or implicitly) as an opportunity

to express one's identification and affection towards particular product domains and product design of the company.

7.2.2 CREATING HYBRID BUSINESS MODELS BASED ON APPEALING PRODUCT VISIONS

Beyond attracting investments from investors to whom the company's (current) product design appeals, corporate (design) managers, entrepreneurs, and designers should also consider defining new kind of "hybrid" business models that take, already at the outset, into account certain investors' special attraction to the company's current or future products.

Specifically, with hybrid business models I mean new business models, whereby corporate managers or entrepreneurs outline *simultaneously* (or, interdependently)

a) a *product design vision*: what kind of products (i.e., product categories as well as special design aspects and benefits) the company or new venture will develop/design and, consequently, introduce and sell in the market (and to whom users/buyers/customers), and

b) an *investor vision*: which investors the company will attract with its product design vision – due to the envisioned products' being personally relevant to and liked by those investors – so as to obtain capital for the development/design of the very product(s).

The difference of this kind of hybrid business model from the ordinary business models held by corporations in recent decades is clear. Namely, while conventional business models tend to "isolate" investors from the rest

[38] In this sense, for instance Apple Computer already runs a hybrid business model – considering that "Apple shareholders are typically very loyal [and also] own the company's products" (McIntyre, 2008; see also Aspara & Tikkanen, 2008; Schoenbachler, Gordon, & Aurand, 2004).

of the business model by assuming that investors are only interested in the financial returns that the business is likely to yield, the hybrid business model will assume – as its essential "component" – the contribution of investors who are inherently interested in and attracted by the products and product design that the company envisions. The hybrid model has the advantage that capital and investors (needed for product development/design and related activities) are easier to attract – per the results of the present research – among people to whom the product domain is personally relevant and product design likeable. Such investors are also likely to be more committed than (random) investors who only care about the financial returns of the company. Of course, the hybrid business model may involve also investors that are "in" for the company merely due to financial reasons (perhaps, institutional investors). Yet, the fundamental idea is indeed that a considerable part of the investors (who supply capital) lend their support to the company and its business model not only because expected financial returns but also because they are inherently appealed by the products and product designs of the company (even if those products did not exist yet, but were still under development).

An example of this kind of hybrid business model could be one whereby a company or entrepreneur envisions development and design of a new kind of solar panel -powered car and seeks a substantial part of the financial resources needed for the development/design of that product from investors who find cars, road traveling, and/or environmental friendliness as personally relevant domains worth supporting. The business model may also include the idea that some or many of the investors will be actual users and buyers of the car, as soon as it comes to market[38]. The mass of future users/buyers is, however, meant to be outside the initial investor group, which will ensure that the initial investors will also obtain financial returns for their investment (besides the self-expressive and emotional returns from realization of the product vision).

Another example of a of hybrid business model could be one whereby a company or an entrepreneur envisions development and design of a new

gardening robot, which facilitates old people's gardening activities. Here, the business model might include the idea that a substantial part of the financial resources needed for the development/design is obtained from investors who find gardens and, perhaps, ease-of-life as personally relevant domains worth supporting.

The recommendation about hybrid business models – as an implication of the results of the present study – is a fundamental extension of design management literature's extant notion concerning processes and activities of designing (cf. section 2.1.2) at the strategic level of a company's business.

Especially, the recommendation echoes the view that management of design at the corporate level pertains not only to (i) product development/innovation or (ii) visual identity creation but also to (iii) definition of the company mission or vision (Borja de Mozota, 2003, p. 67; see also Svengren, 1995a, 1995b). Indeed, the product design vision and investor vision of the hybrid business model must be *outlined* – already at the outset – into a conceptually coherent whole that is likely to be functionable. The question may at first be, to a large extent, about preliminary product concept design (see e.g., Keinonen & Takala, 2006), however with special emphasis put, early on, on considering which investors the product concept (or vision) will attract. This work inevitably requires conceptualizing a workable idea or concept of (i) what kind of products will be developed/designed and offered to the markets, as an integral part of (iii) the company's overall mission definition. This integrated conceptualization should – as a whole – appeal to the envisioned investors.

The *implementation* of the outlined business model, then, requires further integration of practical product development and design work with the investor vision, so that capital needed for that work can be obtained and secured, in practice, from the envisioned investors. Insofar as all this strategic design management related to the hybrid business model – both in the outlining phase as well as implementation phase – result to be successful, the envisioned product concept(s) will be realized in the form of market-

able products. In the ideal outcome, use value will be consequently created to the users/buyers of the products, while both profits and self-expressive/emotional value are generated to the company's investors or shareholders.

All in all, the hybrid business model clearly reflects an idea of a truly strategic approach to design management, i.e., of viewing design as a new paradigm for arriving at ideas and methods that can be used to enhance a company's business strategy and vision through understanding functionality, psychology, sociology, shape, and aesthetics of product artifacts (Borja de Mozota, 1992). Moreover, it reflects an idea where design can be a major driver of the company's strategy rather than merely being influenced by strategy (see e.g., Hertenstein & Platt, 1997; Ravasi & Lojacono, 2005). Such approaches have indeed been emerging in design management thought for the past two decades. What this dissertation has now essentially done is to explore what role investors might have therein.

7.3
LIMITATIONS AND FURTHER RESEARCH

7.3.1
LIMITATIONS OF THE PRESENT STUDIES

There are certain limitations in the present studies. The potential non-response/selection bias in the studies presents a possibility that in a wider population of investors, the found effects of the product design factors on investment behavior might be weaker than what my data indicated. This would be the case if such investors among whom the found effects were more prevalent chose to respond to the questionnaires more often than investors among whom the effects were weak or non-existent. However, as described in the Method sections (5.1 and 6.1), I controlled for non-response bias with the conventional procedure of comparing early and late respondents. Since the tests did not indicate any significant differences between early vs. late respondents, one can conclude that non-response bias should not be a very serious concern.

In Studies 1a and 1b, an additional limitation is caused by a potential retrospection bias. Notably, investors' retrospective self-reports about their attitudes towards a company at the time of investment are inevitably "constructed" to some extent at the time of answering rather than purely corresponding to an accurate memory of those attitudes (see e.g., Barrett, 1997; Levine, Prohaska, Burgess, Rice, & Laulhere, 2001; Levine & Safer, 2002; Levine, Safer, & Lench, 2006). Similarly, investors' retrospective views about their decisions to invest in companies are to some extent constructed at the time of answering. Especially, there is the possibility that the investors "post-rationalize" their investment decisions by overestimating (retrospectively) the positivity of their affect for the companies' product design (to justify the decision to themselves or the researcher). They may even retrospectively overestimate their expectations about the financial returns from particular stocks. (cf. Bem, 1972).

While the results of Studies 1a and 1b might admittedly be somewhat biased in the above senses, the concerns are actually not very great regarding the general effects on the main dependent variables. In particular, there is no reason to believe that the investors in general would post-rationalize their decisions by overestimating the extent to which they were prepared to sacrifice expected financial returns when investing in the particular company – or the extent to which they were determined to invest in the company in case another company would have offered the same financial returns. After all, exaggerating such preparedness or determination – which, in effect, imply some disregard of money – would be all *but* rational. This point gives us confidence that the results from Studies 1a and 1b will be rather accurate and, at least, show the right direction of the effects – even if based on retrospective self-reports.

Note also that Study 2 was essentially designed, in the spirit of data triangulation, to gather complementary evidence – evidence which would not suffer from retrospection bias of Studies 1a and 1b. Now, since the evidence from Study 2 was by and large consistent and pointed to the same direction as that of Studies 1a and 1b, the overall validity and reliability of the results of

the dissertation can be considered to be fairly good. Especially, the revelation of the strong effect by the experimental factor of product design emphasis in a company's investment advertisement gives us confidence in the results. Also, the high statistical significance of covariates in Study 2 (reflecting the same product design -related factors that were examined in Studies 1a and 1b) renders credibility in the results overall.

Yet, it must be noted that Study 2 has its own limitations, as well. Especially, the complexities of the psychological-behavioral mechanisms could not be modeled in Study 2 to the extent that they were modeled in Studies 1a and 1b, due to the relatively simple experimental setting of Study 2. Moreover, the fact that the "case companies" in Study 2 were all foreign brings its own limitation: Based on the results of Study 2, we cannot be absolutely certain that the same effects (especially concerning the product emphasis in the investment advertisement) would be found similarly for domestic companies, or in similar effect size. Thus, it is possible that the effect sizes would be either greater or smaller for domestic companies – and it is also possible that the effects might be different for companies located in countries at differential distances than the companies of Study 2. Nevertheless, considering the fact that Studies 1a and 1b addressed domestic companies while Study 2 addressed foreign companies and the fact that the results were consistent across the studies, we can be fairly confident that our results hold to a large extent independent of whether the companies are domestic or foreign (relative to the investors).

It must also be noted that both the theoretical development and empirical data of the studies focused on addressing the effects of positive affect for a company's product design (or its relevance). In contrast, the effects of highly negative affective evaluations (or total irrelevance felt) were not explicitly addressed, as a separate case. Of course, it is possible that the effects of an investor's highly negative affect for a company's product design are simply inverse to those of highly positive affect. Nevertheless, this is not necessarily the case and hypotheses concerning the influences of investors' potential negative affective evaluations of companies' products and product

design should be further analyzed theoretically and empirically tested.

Final limitations to be addressed relate to the variable measurements. Most notably, the measurement items that were used for the dependent variables (optimism, confidence, determination to invest when equal returns, preparedness to invest with lowered returns, interest to invest) were mostly new and developed for this study, being therefore somewhat exploratory. Their validities and reliabilities were not completely proved even if issues of discriminant and convergent validity were addressed in some measure. The new survey measures for optimism and confidence about a company's financial returns, in particular, will need further validation – considering the importance of correct measurement of financial returns expectations for finance research. Indeed, the conceptualization of optimism as the overall positivity of an investor's expectations of the (likely) financial returns of a stock and confidence as the investor's belief of the precision of his subjective information/view of the financial returns probability distribution of the stock *a priori* (and, therefore, one's felt surprise of the realized returns, *a posteriori*) need further validation. Also, language issues need to be accounted for: The original measurement items in the present studies were in Finnish and have been translated into English for this dissertation. This means that the impression that an English-speaking reader of this dissertation obtains of the content of the measurement items might not perfectly match with the impression obtained by the studied Finnish investors (e.g., "design", "returns", "risk", "surprise") – not even if the author did exercise great carefulness in translating the items.

7.3.2
AVENUES FOR FURTHER RESEARCH

Evidently, the present research is among the first of its kind – if not the first – to examine how investors' evaluations of companies' products and product design influence their investment decisions. In fact, the present dissertation is also among the first responses to the call to use consumer-psychological

theories and research techniques in studying individuals' investment preferences (Clark-Murphy & Soutar, 2004, 2005; Fama & French, 2004; Statman, 2004). Nevertheless, much further research is needed in the area.

First of all, replicating the present studies with different companies from different industries, and supporting/representing different domains with their products, should be considered in further research. Similarly, investors from different countries, and having different personal backgrounds, will need to be studied more extensively – so that it can be confirmed whether the (causal) effects found in this study are present with investment publics in general, around the world. Concerning home countries, future research must also pay more explicit attention to and explicitly model the potentially confounding factors related to cross-border investing and home bias – which remained beyond the scope of the present dissertation (albeit that the case companies in Study 2 were foreign). Moreover, interaction effects of the found causal factors and investors' personal characteristics should be considered further. It is worth noting that in additional analyses that I have conducted on the present data, I have not found significant interaction effects by e.g., number of stocks owned, investment volume, investment tracking activity, or basic demographics. Yet, further research should examine such and other interaction variables in more detail.

What is more – as implied at the end of the limitations section above – the measurement variables used in the present studies should be further scrutinized and validated in future research, especially when it comes to the finance-related dependent variables (optimism, confidence, determination to invest when equal returns, preparedness to invest with lowered returns). In effect, the operationalization and further validation of the variables could and should constitute one stream of future research in its own right. With respect to the product design -related predictor variables, in turn, an important avenue of further research would be to extend the contents of the variables to explicitly include also investors' perceptions of the companies' organizational product design capabilities (cf. e.g., Jevnaker, 2000, 2005; Johansson & Holm, 2006; Kristensen & Lojacano, 2002; Terrey, 2008) –

i.e., beyond the end-product (or product artifact) perceptions, on which the present variables focused.

When it comes to more far-reaching extensions of the current research, it would be interesting to study whether and to what extent the results of this dissertation apply not only to individual investors but, perhaps, also to institutional investors and/or investment market intermediaries and professionals, such as investment analysts and investment advisors. One might think that professionals would not be influenced at all by the somewhat "soft" and affective product design factors proposed in this research. Nevertheless, some preliminary existing studies show that professional investment analysts, for instance, often make investment evaluations and decisions based on affective or attitudinal factors, as well (Ganzach, 2001). Thus, there is indeed a fruitful setting for studying how the product design -related psychological and behavioral mechanisms proposed in this dissertation potentially influence the investments of professional and institutional investors, too.

In addition, it will also be important to examine the effectiveness of various design management strategies suggested in section 7.2 in further research, based on the insights developed in the present dissertation. To start with, further research should further examine the real-life effectiveness of advertisements and other communications that are targeted to investors and emphasize the company's product design. One way to study this issue would be to examine whether product advertising campaigns or trade shows wherein the company's product design is prominently presented result in increased number of investors buying the company's stock and/or with

[39] There is some research that examines the stock price reactions to advertising campaigns in general (see e.g. the review by Srinivasan & Hanssens, 2009). However, advertisement campaigns that explicitly emphasize a company's product design have not been examined. Also, rather than the reactions of stock prices – which may be influenced by a multitude of complex factors – further studies should consider examining investor interest (as enhanced by the product design appeals in advertising) in more direct ways.

increasing volume[39]. Another way to study the issue would be to examine the effects that product design illustrations incorporated in companies' real-life stock issue prospectuses (or, ads for stock issues) have on investors' interest to participate in the stock issues. Note also that while appealing communication about a company's product design increases – according to the present results – investors' interest to invest in the company, there is basically nothing in the present results that requires such communications to be restricted to the company's current products (i.e., those already in the market). Even appealing projections of products – or product concepts – that the company is just envisioning but not yet producing (or having in the market) may increase investors' interest and willingness to invest in the company. Companies in auto and mobile communications industries, for instance, commonly present such future-oriented, visionary product concepts through media (see Keinonen & Takala, 2006), and it would be interesting to study to what extent, exactly, the presentation and illustration of such product concepts indeed influence investors' investment interest.

Similarly, it will be highly interesting to explore the kind of hybrid business models proposed, which integrate at the outset such investors to a company's business model, to whom the company's product domain and product design overall appear genuinely appealing. Further research on these strategic design management applications could deploy a variety of methods, including case studies of companies and their intended design strategies and business models; statistical measurements on the manifest strategies of company populations; manager surveys among large samples of companies; consumer and investor surveys, and field experiments. Also action-oriented design research on the novel kind of hybrid business models should be pursued.

All in all, I indeed encourage further research and applications in this important area to be conducted both in academia and managerial practice of design management. There are, presumably, many insights still to be developed to strategic design management – when it comes to managing design not only with users/buyers of the company's products in mind, but also the company's investors and shareholders.

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APPENDIX A

Cover letter sent to investors in study 1 (1a and 1b)

Dear [company D]'s stockholder,

You have been chosen to be a participant in a study by Helsinki School of Economics. The study seeks to find out about investors' attitudes towards various firms as well as about factors influencing their investment decisions.

Your contact address was obtained from the shareholder register of [company D]. Shareholder registers are, according to law, public records and available at corporations' headquarters as well as at the Finnish Central Securities Depository. From [company D]'s shareholder register, we have randomly chosen appr. 250 shareholders to participate in the study.

Helsinki School of Economics is conducting the research independently and purely for scientific purposes.

The companies appearing in the questions have – in order to support scientific research – approved the study and wish that the stockowners whom the survey has been sent would respond to it. The company whose stock you own, [company D], is one of these participating companies. Other companies participating are e.g. [company A], [company B], and [company C].

It is optional to respond to the survey, but by responding you can contribute to the progress of an important Finnish economic study. Your participation is also very important for 2 master's theses and one doctoral dissertation. Every answer is very valuable and important!

We hope that you would respond to all the questions in the questionnaire. There are no right answers to the questions, meaning that you can answer the questions entirely based on your personal views. Answering the questionnaire takes about 20 minutes.

The answers are treated confidentially and anonymously. In other words, your personal information is not associated with the answers in any analyses, and one cannot identify the answers of an individual respondent from the results of the study. In addition, all of your personal information will be deleted from our databases after the study has ended.

No-one but the researchers belonging to the research team (3 persons) will have access to the answers. The participating companies or any third parties will not have access to the answers.

We will draw a lottery among respondents who have returned the questionnaire by 30.7.2007. Prizes in the lottery include a sport equipment set, a knife set, and car tire set, with a value of 300 euros or more.

Thus, we kindly ask you to return the filled-in questionnaire by 30.7, in the attached reply envelope.

Gratefully for your help,

On behalf of the research team: N.N and M.M.
Helsinki School of Economics
e-mail: n.n@student.hse.fi

APPENDIX B / *Table B1.*
Results, Model 1a: The effects of investors' evaluations of a company's product design on their financial expectations about the company's stock (as well as consideration of alternatives)

Effect of	*On*	*Path-coeff.*	*t-value*	*Hypothesis*
Hypothesized paths				
Personal relevance of the company's product domain	Familiarity with the company's products	0.308	6.19***	H1 supported
Personal relevance of the company's product domain	Consideration of alternative stocks	-0.162	2.03*	H5 supported
Personal relevance of the company's product domain	Overall affect for the company's product design	0.131	2.61**	H13 supported
Familiarity with the company's products	Confidence about the company's financial returns	-0.080	0.83	H4.0a/4.1a not supported
Familiarity with the company's products	Consideration of alternative stocks	0.170	2.03*	H3.1 supported
Overall affect for the company's product design	Consideration of alternative stocks	-0.175	1.60[a]	H3.0 not supp. H8 marg. supp.
Overall affect for the company's product design	Optimism about the company's financial returns	0.270	2.44**	H11 supported
Overall affect for the company's product design	Confidence about the company's financial returns	0.101	0.83	H12 not supported
Confidence about the company's financial returns	Consideration of alternative stocks	-0.404	4.19***	H4.0b supported
Controls				
Familiarity with the company's products	Optimism about the company's financial returns	-0.053	0.73	
Optimism about the company's financial returns	Consideration of alternative stocks	0.071	0.62	
Personal relevance of the company's product domain	Confidence about the company's financial returns	0.088	1.00	
Personal relevance of the company's product domain	Optimism about the company's financial returns	-0.021	0.21	
Familiarity with the company's products	Overall affect for the company's product design	0.521	10.29***	
Company dummy controls				
Focal/investee company B	Confidence about the company's financial returns	-0.280	0.66	
Focal/investee company C	Confidence about the company's financial returns	0.231	0.57	
Focal/investee company B	Optimism about the company's financial returns	-0.214	0.54	
Focal/investee company C	Optimism about the company's financial returns	0.015	0.04	
Focal/investee company B	Consideration of alternative stocks	1.192	1.86*	
Focal/investee company C	Consideration of alternative stocks	-0.108	0.27	
Company dummy interactions				
Focal/investee company B X Personal relevance of the company's product domain	Consideration of alternative stocks	0.183	1.33[a]	

Effect of	*On*	*Path-coeff.*	*t-value*	*Hypothesis*
Focal/investee company C X Personal relevance of the company's product domain	Consideration of alternative stocks	0.194	1.65*	
Focal/investee company B X Personal relevance of the company's product domain	Confidence about the company's financial returns	-0.004	0.03	
Focal/investee company C X Personal relevance of the company's product domain	Confidence about the company's financial returns	0.122	0.67	
Focal/investee company B X Personal relevance of the company's product domain	Optimism about the company's financial returns	0.192	0.93	
Focal/investee company C X Personal relevance of the company's product domain	Optimism about the company's financial returns	-0.049	0.33	
Focal/investee company B X Familiarity with the company's products	Confidence about the company's financial returns	0.065	0.22	
Focal/investee company C X Familiarity with the company's products	Confidence about the company's financial returns	-0.013	0.06	
Focal/investee company B X Familiarity with the company's products	Optimism about the company's financial returns	0.457	1.35 [a]	
Focal/investee company C X Familiarity with the company's products	Optimism about the company's financial returns	-0.070	0.39	
Focal/investee company B X Familiarity with the company's products	Consideration of alternative stocks	-1.114	3.11***	
Focal/investee company C X Familiarity with the company's products	Consideration of alternative stocks	-0.397	2.31*	
Focal/investee company B X Overall affect for the company's product design	Confidence about the company's financial returns	-0.136	0.28	
Focal/investee company C X Overall affect for the company's product design	Confidence about the company's financial returns	-0.569	1.22	
Focal/investee company B X Overall affect for the company's product design	Optimism about the company's financial returns	-0.713	1.63 [a]	
Focal/investee company C X Overall affect for the company's product design	Optimism about the company's financial returns	-0.104	0.27	
Focal/investee company B X Overall affect for the company's product design	Consideration of alternative stocks	-0.086	0.14	
Focal/investee company C X Overall affect for the company's product design	Consideration of alternative stocks	0.345	1.00	
Focal/investee company B X Confidence about the company's financial returns	Consideration of alternative stocks	0.297	2.03*	
Focal/investee company C X Confidence about the company's financial returns	Consideration of alternative stocks	0.238	2.29*	
Focal/investee company B X Optimism about the company's financial returns	Consideration of alternative stocks	-0.369	1.01	
Focal/investee company C X Optimism about the company's financial returns	Consideration of alternative stocks	-0.022	0.08	

[a] $p < .10$ (one-sided); *$p < .05$ (one-sided); **$p < .01$ (one-sided); *** $p < .001$ (one-sided).
Notes: The t-values were calculated through a bootstrapping routine with 340 cases and 500 samples.

APPENDIX B / *Table B2.*
Results, Model 1b: The effects of investors' evaluations of a company's product design on their investment decisions, beyond financial returns

Effect of	*On*	*Path coeff.*	*t-value*	*Hypothesis*
Hypothesized direct paths				
Personal relevance of the company's product domain	Familiarity with the company's products	0.177	2.69**	H1 supported
Personal relevance of the company's product domain	Determination to invest when equal financial returns	0.061	1.25[a]	H6 marg. supported
Personal relevance of the company's product domain	Preparedness to invest with lower financial returns	-0.043	1.06	
Personal relevance of the company's product domain	Overall affect for the company's product design	0.090	2.04*	H13 supported
Overall affect for the company's product design	Determination to invest when equal financial returns	0.273	3.57***	H9 supported
Overall affect for the company's product design	Preparedness to invest with lower financial returns	0.049	0.89	
Familiarity with the company's products	Familiarity with the company	0.289	2.01*	H2 supported
Familiarity with the company	Determination to invest when equal financial returns	0.148	2.37**	H0 supported
Hypothesized paths through mediator (Willingness to support...)				
Personal relevance of the company's product domain	Willingness to support the company by investing	0.251	4.59***	H6, H7, H9, H10 supported – partial mediation
Overall affect for the company's product design	Willingness to support the company by investing	0.110	1.99*	
Willingness to support the company by investing	Determination to invest when equal financial returns	0.352	6.14***	
Willingness to support the company by investing	Preparedness to invest with lower financial returns	0.425	7.78***	
Controls				
Familiarity with the company	Preparedness to invest with lower financial returns	-0.029	0.69	
Company dummy controls				
Comparison company D	Determination to invest when equal financial returns	-0.042	0.97	
Comparison company D	Preparedness to invest with lower financial returns	-0.163	2.65**	

Effect of	*On*	*Path coeff.*	*t-value*	*Hypothesis*
Comparison company D	Overall affect for the company's product design	0.206	4.54***	
Comparison company D	Familiarity with the company's products	0.061	1.22	
Comparison company D	Familiarity with the company	-0.041	1.03	
Comparison company A	Determination to invest when equal financial returns	0.024	0.58	
Comparison company A	Preparedness to invest with lower financial returns	-0.087	1.68	
Comparison company A	Overall affect for the company's product design	-0.174	3.29***	
Comparison company A	Familiarity with the company's products	-0.009	0.24	
Comparison company A	Familiarity with the company	-0.146	2.06*	
Focal/investee company C	Determination to invest when equal financial returns	0.033	0.79	
Focal/investee company C	Preparedness to invest with lower financial returns	-0.029	0.74	
Focal/investee company C	Overall affect for the company's product design	-0.072	1.62 [a]	
Focal/investee company C	Familiarity with the company's products	-0.175	2.75**	
Focal/investee company C	Familiarity with the company	-0.025	0.78	
Focal/investee company B	Determination to invest when equal financial returns	-0.212	2.26*	
Focal/investee company B	Preparedness to invest with lower financial returns	-0.210	2.28*	
Focal/investee company B	Overall affect for the company's product design	0.807	16.96***	
Focal/investee company B	Familiarity with the company's products	0.190	2.90**	
Focal/investee company B	Familiarity with the company	0.093	1.41 [a]	

[a] $p < .10$ (one-sided); *$p < .05$ (one-sided); **$p < .01$ (one-sided); *** $p < .001$ (one-sided).
Notes: The t-values were calculated through a bootstrapping routine with 292 cases and 500 samples.

APPENDIX C

Cover letter distributed to investors in Study 2

Dear stock investor,

The questionnaire in front of you is related to research by Helsinki School of Economics, in which we aim to study stock investments of private individuals, including their interest to invest in various kinds of companies in connection with e.g. stock issues. By responding to the questionnaire, you can considerably facilitate the doctoral research of one of the researchers, as well as help to ensure valid results from the study.

Helsinki School of Economics does the research independently and merely for scientific purposes.

This means that although the questionnaire presents questions concerning certain example companies, your answers do not end up in any form to the use of those companies. As a matter of fact we, as researchers, have chosen the example companies in a random way just for this questionnaire and have not been in any contact with the companies in question.

It is voluntary to respond to the questionnaire, but by answering you can contribute to the advancement of important scientific research. As mentioned, your participation is also very important for one doctoral dissertation. Every answer is therefore highly valuable and important.

We hope that you answer to all the questions. There are no right answers to the questions, meaning that you can respond entirely according to your own personal views and opinions. In other words, the idea is that you answer the questions in accordance to how you currently feel, and based on the information presented in the questionnaire (without acquiring further information from somewhere).

Answering the questions takes approximately 15-20 minutes.

The answers are treated confidentially and anonymously. In other words, your personal information is not associated with the answers in any analyses, and one cannot identify the answers of an individual respondent from the results of the study. In addition, all of your personal information will be deleted from our databases after the study has ended.

No-one but the researchers belonging to the research team (3 persons) will have access to the answers. The example companies or any third parties will not have access to the answers.

We will draw a lottery among respondents who have returned the questionnaire by 28.3.2009. Prizes in the lottery include several books (worth, on average, 50 euros). If you want to participate in the lottery, please write down your email address on the first page of the questionnaire, so we can contact you in case.

If you wish, we will also send a summary of the results of the study to your email address.

All in all, we kindly ask you to return the filled-in questionnaire by 28.3, in the attached reply envelope.

Thankfully,

N.N & N.N
Helsinki School of Economics
e-mail: n.n@hse.fi; puh. xxx xxxx xxx (N.N)

ABSTRACT

Design management research has increasingly advocated strategic perspectives to product design. However, one important, strategic business aspect has been rather completely ignored in extant research. That is, the role and behavior of investors in respect to a company's product design. The purpose of this dissertation is to address this research gap by examining, in particular, the following research question: *How do investors' subjective perceptions and evaluations of a company's product design influence their investment decisions towards the company's stock*? My theory and hypothesis development concerning the underlying psychological and behavioral mechanisms are based on (social) psychological theories of personal relevance and involvement, identification and self-expression, and affect – as related to products and product design. The theory development is also supported by recent notions from behavioral finance research on investor behavior. The focus is on individual/private investors, who actively invest in the stock market (rather than institutional or professional investors).

In order to test a set of hypotheses developed, I conducted three studies by gathering quantitative (survey) data on investors who are active investors in the Finnish stock market. Two of the studies involved a correlational survey dataset (n≈300), analyzed with causal (path) modeling. The third study was a conventional randomized experiment (n≈190).

As to the results of the dissertation, my theoretical analysis and empirical evidence reveal two important, product design -related factors that influence investors' willingness and decisions to invest in companies' stocks. The first factor is (1) the personal relevance or importance that an investor attaches to "life domains" that the company's products represent or support. Such life domains can be various activities or areas of interests (e.g., road traveling, gardening, sport) – or more abstract themes or ideas (e.g., healthcare, mobility, environment-protection). The second factor is (2) the investor's overall affect or liking for a company's product design. This factor reflects the degree to which the investor perceives the company's products to be pleasant, attractive, good, and likeable overall. The results show, first of all, how these two product design -related factors have positive effect on an investor's optimism about the company's financial returns and negative effect on the consideration that he/she gives to alternative investment targets. Moreover, the results suggest that the two factors also contribute to investors' investment decisions beyond the financial returns expected from companies. Indeed, the two product design factors are found to have positive effect on

investors' determination to invest in the focal company rather than in other companies that have approximately similar expected financial returns. And even further: the factors are found to elicit preparedness to invest in the company with lower financial returns expected from the company than from other companies (i.e., by easing up on financial return requirements on the company).

In sum, the findings suggest that the more personally relevant a company's product domain is to an investor – and/or the more overall liking the investor has for the company's product design – the greater is the investor's willingness to invest in the company.

The results considerably extend the design management notion of the strategic benefits that a company can enjoy from designing pleasurable and personally meaningful products – especially by showing that product design will not only create strategic distinction for the company in the product markets, but also in the stock markets. In so doing, the present findings have implications for (design) management practice when it comes to attracting investments (especially from investors who are appealed by the company's product design) as well as creating hybrid business models (that take into account, already at the outset, certain investors' potential fondness of the company's current or future product design).

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